HEALTH BUILDING NOTE 23

MCO 111

Hospital Accommodation for Children

DEPARTMENT OF HEALTH AND SOCIAL SECURITY
WELSH OFFICE

HMSO £5.30 net

Health Building Notes

Health Building Notes are intended for use in the briefing and design stages of projects to assist those concerned with the provision and design of new health buildings and the adaptation or extension of existing premises. The Notes contain information on the relevant aspects of current policy, the functional requirements and resultant design implications. Their objective is to provide standards of accommodation that are economically consistent with the functional requirements and a Departmental Cost Allowance that is directly related to these standards.

A flexible approach is adopted in the Notes. Optional solutions with cost implications are indicated, where appropriate, leaving local planners to make their own choice, having regard to overall cost limits. The general approach is to identify functions, activities, equipment needs and those dimensions which are critical to the efficient performance of an activity, but not to relate functions to specific or preconceived floor areas.

A feature of the Notes is the reference to Activity Data sheets (Chapter 5) which provide the detailed user requirements for each room or space.

To avoid repetition, guidance on spaces that commonly occur in health buildings has been brought together in a Health Building Note entitled "Common Activity Spaces" to which reference is made, where appropriate, in each Note. At the time of writing, a draft of the Common Activity Spaces document has been made available to NHS Authorities.

The Notes are prepared in consultation with representatives from the NHS and appropriate professional bodies concerned with, or having a specific interest in, their content.

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1 General considerations

1.1 This Health Building Note deals with the accommodation requirements for children in the district general hospital (DGH) and replaces Hospital Building Note No 23, Children's Ward, issued in April 1964.

1.2 The accommodation for children (other than the long stay units and the regional and sub-regional specialties and services) should form part of a DGH under the general oversight of the consultant paediatrician with a senior nurse of appropriate training and experience, as recommended in HM(71)22 and annex 'Hospital Facilities for Children'.

1.3 In the past two decades, the greater knowledge of child development and the recognition of the fundamental emotional, as well as physical, needs of children has created a more enlightened attitude to the care of children in hospital, bringing about radical changes in the attitudes of staff and in the organisation of nursing sections (wards). All children, irrespective of their illness or requirements for specialist care, have these needs. They are best met by having children together in children's units, which allows them to be nursed by those who have the requisite qualifications and experience and who know the techniques required in the care of the sick child, which differ from those that apply to adult patients. It enables a children's physician to be responsible for the general management and oversight of the unit and the welfare of the children without any diminution of clinical responsibility of the consultant. Additionally, it makes it easier to arrange for education and play, unrestricted visiting and provision of accommodation for parents. It is disturbing to sick adults in general nursing sections to have ill children around them and the provision of separate accommodation obviates this.

The care of children in hospital involves giving attention to their emotional, as well as their physical, needs.

1.4 In order that the special needs relating to children of different ages are given due consideration, it is important that doctors, nurses and remedial therapists with experience in the care of children, and with current responsibility for such care, should be involved from the initial stages in the planning of new accommodation.

Inclusions

1.5 This Note gives guidance on the design of hospital accommodation for children for:

a. out-patient services

b. comprehensive assessment and care

c. in-patient services

d. day patient services.

Exclusions

1.6 The Note does not cover:

a. in-patient accommodation for children requiring highly specialised care which is normally provided in selected hospitals eg cardiac surgery, oncology, oncological surgery and treatment for major burns;

b. accommodation for—

i. special care babies (guidance was given on special care baby units in the Interim Design Guide for a Maternity Department in a District General Hospital (DS 177/73 July 1973 and Welsh Office's letter dated 8 August 1973 (HSD 3/31/2);

ii. children in need of intensive therapy (2.86);

iii. children requiring isolation for infectious diseases (2.86);

iv. mentally-handicapped children in long-stay accommodation (building design guidance on health service accommodation for the mentally-handicapped is given in Health Building Cost Allowances for Small Mental Handicap Hospital Units (HN(77)58) and Health Service Residential Accommodation for the Mentally-Handicapped (HN(80)21 Annex III);

c. in-patient and out-patient accommodation for acutely disturbed children and adolescents. (There are no plans to prepare a building note for child psychiatric provision, particularly bearing in mind that the type and scale of hospital-based provision needed is heavily dependent on local circumstances. Any authority planning hospital-based child psychiatric provision, whether separately or in conjunction with children's accommodation, will need to draw up its requirements and consider costs

in relation to individual circumstances. Reference is made however in this Note where appropriate to the contribution which children's accommodation can make to child psychiatry.)

Application

1.7 For simplicity, the guidance is directed towards the provision of new accommodation but it is relevant also to the adaptation of existing premises.

1.8 The standards set out in this guidance apply to the provision of departments by new building. It is not intended that they should be applied retrospectively to existing stock. However, the principles are equally valid and should be applied so far as is reasonably practicable when existing departments are being upgraded or a new department is being constructed within an existing building previously used for other purposes. In such cases the aim should be to meet building note standards whenever possible although it is recognised that compromises will inevitably have to be made.

1.9 The cost of upgrading work should conform to the guidelines indicated in the Department's WKO letter (81)4 issued on 24 July 1981. These guidelines take into consideration the estimated life of the existing building and the difference in cost between an upgraded building and a new building.

1.10 When comparing the cost of upgrading or adapting an existing building to that of a new building, in addition to the building cost, due allowance must be made for the cost of relocating patients and staff, demolition and salvage costs, disruption of services to other parts in a phased project, and the temporary effects on running costs of any impaired functioning of areas affected by upgrading.

Initial planning

Purpose and objectives

1.11 The primary objectives of the hospital service for children are to provide for the diagnosis, treatment and rehabilitation of children suffering from acute medical and surgical conditions — as in-patients, day patients and out-patients — and for the comprehensive assessment, treatment, rehabilitation and review of children suffering from chronic disability.

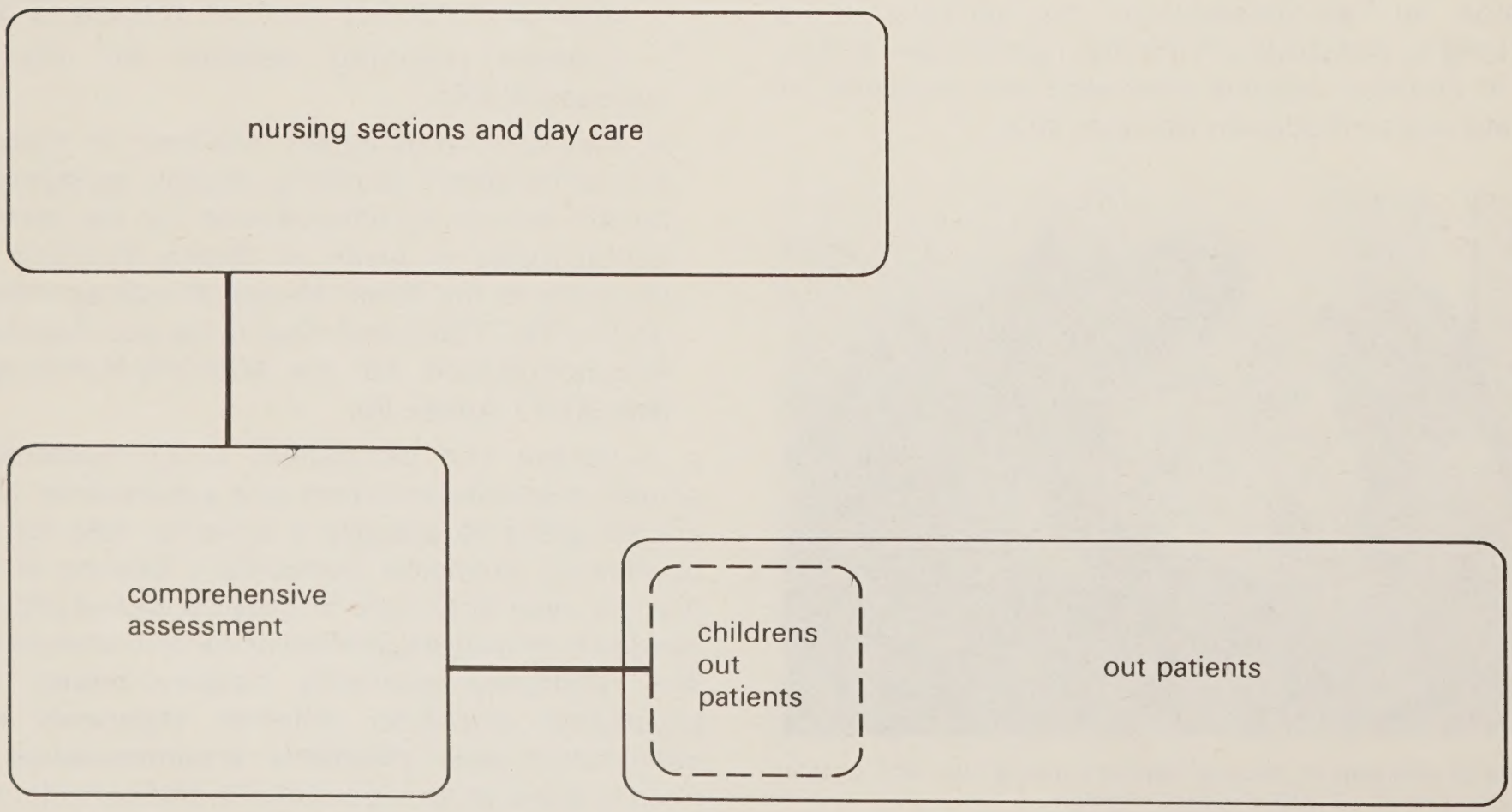
Service planning

1.12 The need to make a careful and accurate assessment of the amount of accommodation required cannot be overstressed. The provision of too much accommodation can have just as serious effects as the provision of too little, not only in terms of the additional capital expenditure but also in respect of the long-term recurring costs of staffing and running the excess accommodation, diverting scarce resources from more pressing needs.

1.13 The provision and use of beds for children vary widely among health authorities. The latest regional figures available suggest a range from 0.6 to 1.4 occupied beds per 1,000 population under age 16, with only three regions having more than 1.0 per 1,000. With current clinical practice, it is considered that an occupancy rate of 75% is the optimum to allow for flexibility in acute cases. This would indicate provision of between 0.9 and 1.1 beds per 1,000 population under age 16, excluding mentally handicapped children and special care baby cots.

1.14 Authorities will need to look carefully at their local clinical practice and how it is changing, together with estimated birth projections, to decide precisely how many beds are required.

Figure 1 Organisation of the childrens hospital accomodation



1.15 When making local assessments, the continuing trend towards shortening lengths of stay, and the amount by which existing occupancy rates fall short of the optimum, must be kept in mind when interpreting data based upon existing accommodation. A falling average length of stay makes it more difficult to sustain a high bed occupancy rate, and it may be that a lower rate than that specified above may be appropriate for some districts. It should also be remembered that figures relating to existing accommodation take no account of the increase in efficiency inherent in new buildings. Particularly close scrutiny will be appropriate where it seems that bed needs are in excess of the above range.

1.16 Before arriving at a final assessment, authorities should explore each of the variables involved and challenge their initial assumptions about these with a view to determining how alternative assumptions might affect the final outcome. Where this leads to a reduction in the estimated assessment, authorities should look carefully at their local circumstances to determine whether or not the alternative assumption might not in fact be a reasonable and practical one to make.

Functional units

1.17 These comprise:

a. out-patient facilities — children's out-patient facilities assessed on the basis of the number of doctor sessions required;

b. comprehensive assessment and care — for the investigation, treatment and diagnosis of all children who fail to develop either physically or mentally (to serve the district or to provide a sub-regional service); this may be provided in association with the children's out-patient facilities within the main OPD or separately;

c. in-patient facilities — the recommended size of each nursing section is 20 beds/cots including day, play and educational facilities. Facilities for parents to stay with their children are also provided;

d. day care unit — comprising 8 bed places for investigation and treatment on a day basis.

Location

1.18 The accommodation for children should be part of an acute DGH. Where the DGH is likely to be planned

Figure 2 Relationships within the hospital

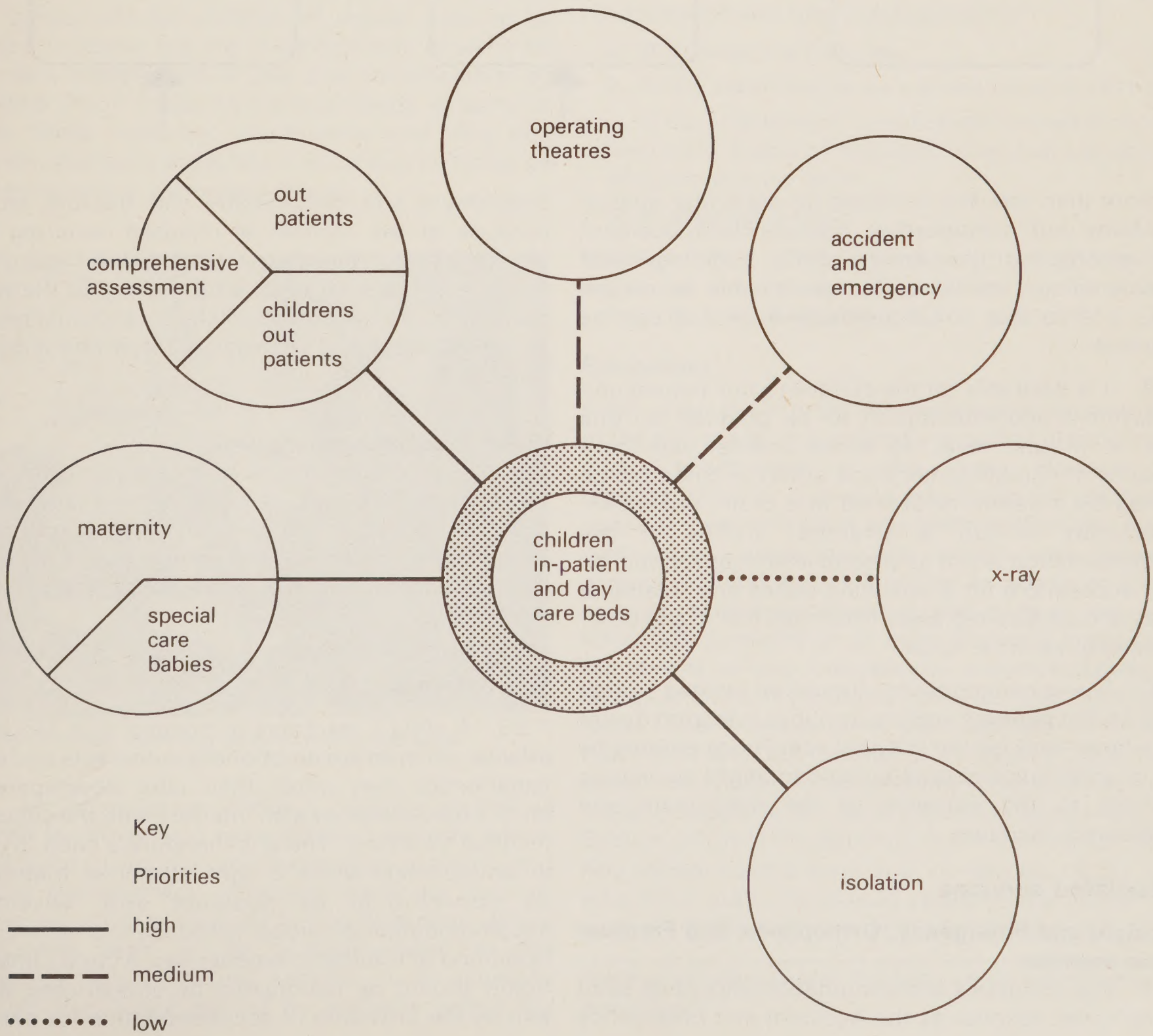
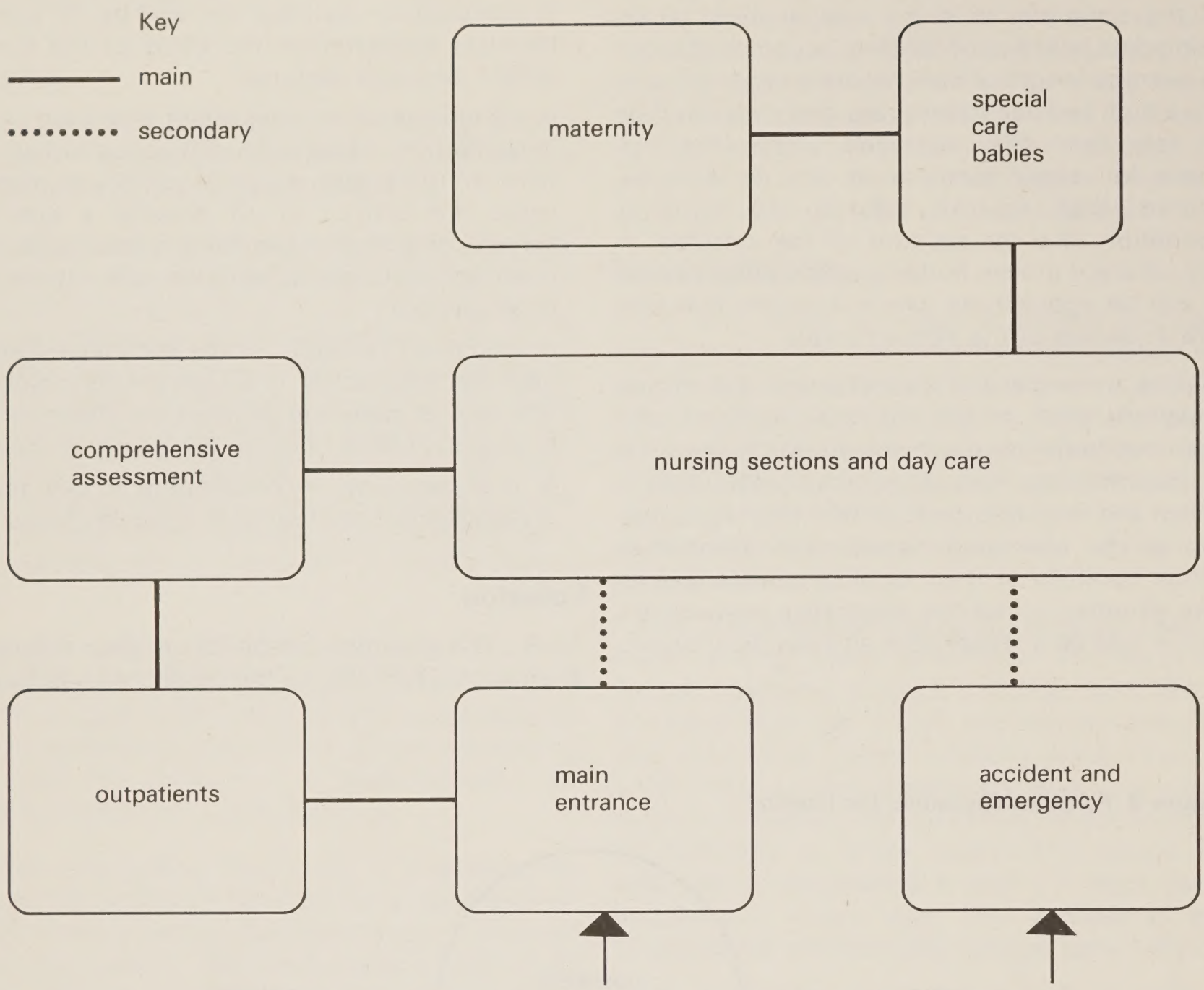


Figure 3 Flow of patients



on more than one site, facilities for maternity, special care baby unit, orthopaedics, fracture clinic, accident and emergency department, ENT, audiology and ophthalmology should as far as possible be on the same site so that a comprehensive service can be provided.

1.19 It is desirable for the children's out-patient and assessment accommodation to be planned on one floor at ground level, as some children will have difficulty in climbing stairs and others will need to be carried by a parent or pushed in a pram, pushchair, wheelchair or on a stretcher trolley. If the accommodation is not at ground level there should be easy access to a lift. Consulting suites and treatment areas should be sited away from road traffic and other sources of external noise.

1.20 The accommodation should be located so that parents and patients arriving by public transport do not have far to walk on the hospital site. Those arriving by car or ambulance should be able to alight as near as possible to the entrance to the out-patient and assessment facilities.

Associated services

Accident and Emergency, Orthopaedic and Fracture Clinic services

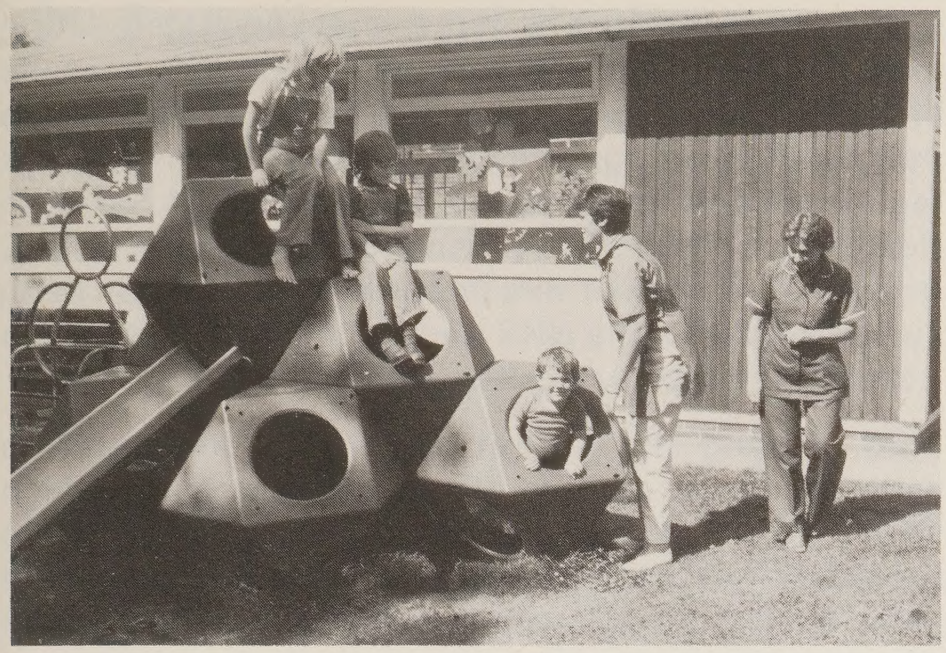
1.21 The children's accommodation should be sited in the same hospital as the Accident and Emergency department and orthopaedic and fracture facilities because of the number of children requiring these services. The children's out-patient facilities, so far as possible, should be in close proximity to the plaster room in the fracture clinic. (Reference should be made to the Accident and Emergency Department Building Note 22.)

Vision, hearing and language

1.22 A child requiring more detailed and specialised assessment of vision, hearing or language abilities than is possible in the children's out-patient examination/consulting rooms and assessment accommodation should use the facilities provided for the district.

The patients

1.23 A child's reactions to hospital may result in ill effects: children are emotionally vulnerable and earlier experiences may affect their later development. A child's reactions may also interfere with the success of medical treatment. There is therefore a need to create an environment which is light, attractive, friendly and as non-clinical as possible and, within the accommodation provided, to reduce to a minimum the likelihood of traumatic experiences. A child's links with home should be maintained by unrestricted visiting and by the provision of accommodation for parents.



There should be a safe outdoor play area.

1.24 The accommodation will need to provide for infants, toddlers, school age children and adolescents and, as far as practicable, the design should take account of their varying needs. The daily fluctuations of bed occupancy, local needs of nursing management and unrestricted visiting are other factors to be taken into account. The environmental aspects are developed in Chapter 2.

Ages of patients

1.25 Generally, children of both sexes from 1-16 years (up to the statutory minimum school leaving age) should be treated in children's accommodation. It is often convenient for children of similar ages to be grouped together but the arrangements need to be reasonably flexible and to take into consideration an individual child's illness and special needs, eg terminal illness. Older children, adolescents and very sick children need to be protected from undue disturbance by noisy toddlers and crying infants.

Education can take place in a classroom or in bed areas.

1.26 Accommodation within a nursing section is required for those who have reached puberty, which depends not so much on age in years but on mental and physical development, although there are circumstances (eg girls in hospital for confinement) where adolescents need to be accommodated in the appropriate adult nursing section. It is generally desirable that space should be available within the overall accommodation in which older children come together so that the common needs and interests of the group may be taken into account.

Play and activities

1.27 Suitable opportunities and facilities for play are needed to enable the children to continue familiar activities, although these may need to be adapted to meet the limitations set by the children's illnesses (see HC(76)5 (WHC(76)10 in Wales) 'Play for Children in Hospital').

Outdoor activity space

1.28 It is desirable that there should be a safe outdoor activity area (2.108) and a garden. The play area for young children in hospital need not differ basically from a play area for children elsewhere. There is a need however to provide opportunities for play and exercise by children in wheelchairs, on crutches or in beds and cots. Emphasis should be placed on providing space and equipment which also allows quiet and creative play.

Rehabilitation

1.29 Account must be taken of the need to provide for occupational therapy and physiotherapy within the children's accommodation, although older children may attend the Department of Rehabilitation for specific treatment if necessary. This Note assumes that rehabilitation will take place primarily:

a. at or near the bedside;

b. in the play/dining area of the nursing section;

c. in the assessment/observation/remedial therapy treatment rooms of the comprehensive assessment accommodation; and

d. in external areas*.

However, it is for individual health authorities to determine their precise requirements at local level, within the overall accommodation provided.

Education

1.30 Education for children in hospital can take place in the bed areas, in a specially provided classroom or, where appropriate, in play areas. However, the responsibility for providing education for children in hospital rests with local education authorities. Health authorities proposing to build new hospital accommodation for children or to adapt or add to existing accommodation should consult the local education authority at an early planning stage about the extent of any educational accommodation, its design and how it should be financed (see DES Design Note). The financial principles outlined in Circular HSC(IS)37 and DES Circular 5/74 dated 21 May 1974 should be applied to accomodation regarded as being made available to the local education authority under Section 26(3) of the National Health Service Act 1977. Any capital contribution and/or rent etc by the local education authority should relate to the capital and running costs of any accommodation provided. (4.12)

*see Health Building Note 45 'External works for health buildings' (in preparation).

Clinical teaching

1.31 Seminar facilities for staff to receive clinical instruction and for case discussion will be required for the in-patient unit and the out-patient and/or the comprehensive assessment unit. This room should be provided only within the Children's accommodation if these is no suitable accommodation elsewhere.

1.32 If it has been agreed that the teaching of undergraduate medical students will take place in the accommodation, and their numbers necessitate additional space, reference should be made to the document 'Teaching Hospital Space Requirements'. (DS 65/74 and Welsh Office's letter dated 29 April 1974 HSD 3/57/1)

1.33 The majority of postgraduate/medical education requiring special facilities will take place in a postgraduate medical education centre or the hospital education centre. Apart from the use of seminar rooms, no special facilities are normally required elsewhere in the hospital.

Administration

1.34 Offices will be needed for use by consultants, senior nursing staff, community care staff and clerical/secretarial support staff. This Note makes no provision for such accommodation as it is assumed that this will be provided under Hospital Building Note 18 — Administrative Department.

1.35 Office accommodation for junior medical staff and charge nurse/sister grade nursing officers will normally be required within the various sections of the in-patient/day patient care unit. Care should be taken to avoid duplication of offices. General communications with the out-patient and the comprehensive assessment units and the in-patient accommodation will be required to facilitate the close contact necessary with the community services.

Statutory and other requirements

1.36 It is Government policy that health buildings should comply with the technical requirements of all relevant statutes and regulations even though the Crown need not always follow the procedural requirements of such legislation. Health buildings should also comply with all relevant codes of practice and standards. Whilst this guidance is compatible with the relevant statutory and other requirements currently in force at the time of writing, it nevertheless does not relieve health authorities of the responsibility for ensuring compliance with statutes, regulations, codes and standards at all stages in their building projects.

Fire safety

1.37 At the time of writing, Departmental guidance on all aspects of fire safety is being prepared in a series of documents within the Health Technical Memoranda series, commencing at HTM 81 (although publication may not be in strict numerical order). It is essential that project teams familiarise themselves with this guidance and the statutory regulations on the subject. In particular, the need for structural fire precautions and means of escape from the whole accommodation must be taken into account at the earliest possible planning stage. Guidance on fire safety as it applies to new health buildings and new parts of health buildings (eg extensions) is contained in HTM 81 'Fire Safety in Health Care Premises — Planning and Design of New Buildings' (a draft of this document has already been circulated within the NHS under the title 'Fire Safety in Health Buildings' dated September, 1978).

1.38 During the design stage it is important to establish those aspects of fire safety strategy which affect the design, configuration and structure of the project. The architect and engineer should discuss and verify their proposals with the local fire authority from the inception of the scheme through to completion, and ensure that the project team and all other planning staff are fully acquainted with the *fire safety strategy* for the design in terms of operation (staff responsibilities etc), equipment provision, and building and engineering layouts.

Smoking

1.39 It is for individual health authorities to make rules about smoking in health buildings under their control and management — see Departmental Health Circular HC(77)3 dated March 1977 (WHC(77)5 dated March 1977 in Wales) but the general approach should be not to allow smoking except in specially designated areas. In such areas, for example, the parents' sitting room, special attention may need to be given to ventilation needs to ensure that non-smokers who have to work or go into these areas are not excessively troubled and that offensive odours do not permeate to other non-smoking areas of the premises.

2 Function and design

Introduction

2.1 This chapter enlarges upon the objectives, functional requirements and design implications of the accommodation described in Chapter 1 and includes a summary of the internal environmental considerations applicable to the accommodation as a whole. Activities, equipment, environmental conditions and finishes of walls, floors and ceilings are detailed in the Activity Data sheets. The chapter comprises:

- general matters
- environmental considerations
- out-patient accommodation
- comprehensive assessment and care accommodation
- in-patient nursing sections
- day patient accommodation.

Privacy

2.2 As children of both sexes up to the age of 16 years and parents will be accommodated, it is essential that the design team should take account of the need to preserve privacy and personal dignity, especially where adolescent boys and girls are nursed or treated in adjacent areas or share certain accommodation and circulation spaces.

Economy

2.3 The design of this accommodation must take account of the need for economy in all aspects including space provision, the good functional relationships of the different units of child accommodation and the rest of the hospital, staff utilisation, energy consumption and maintenance. Whilst the overall capital expenditure must be kept in mind, it is equally important to ensure that all cost consequences of project decisions are fully considered. A booklet entitled 'Note on the relationship between planning health buildings and the cost of running them', issued in September 1980 with HN(80)29, (WHN(80)36 in Wales) should be of interest to design teams.

2.4 The amount of space for a service or group of services should be no more than is currently needed. Planning should ensure that spaces provided are not duplicated and that they are used as intensively as possible. Correct working relationships will help to facilitate economy.

2.5 Materials and finishes should be selected to minimise maintenance costs, including cleaning costs, and be compatible with the functional and environmental requirements. Assemblies which require frequent redecoration or are difficult to service should be avoided. The design of components which are subject to heavy usage such as entrance doors, corners on partitions and counters should receive special consideration. In particular, floor finishes should be restricted in variety and, where soft floor coverings are specified, should have a backing impervious to fluids; reference should be made to HN(78)32 (WHN(78)92 in Wales) — Report of the Floor Covering Study Group.

Health equipment note

2.6 Guidance on equipment for hospital accommodation for children is contained in Health Equipment Note 23 which should be used in conjunction with this Note.

Damage in health buildings

2.7 When designing and equipping health buildings, the likely occurrence and effects of accidental damage should be considered. In particular, such damage in health buildings has increased through the use of heavier mechanical equipment for the movement of patients and supplies and, to some extent, by the use of lightweight, often less robust, building materials. Reference should be made at early design stage to the Common Activity Spaces HBN (in draft) for guidance on protection (especially of corridors), to the relevant British Standards, and to the advice in the Department's DS (Supply) letter 42/75 dated 5 August 1975 (about the buffering of movable equipment).

Security

2.8 Security will normally be a matter of whole hospital policy. Wherever supplies such as linen, food, drugs, instruments, cleaning materials etc are stored, precautions against theft will be required for example, cupboards may need lockable doors, windows should have appropriate protective devices and, in certain circumstances, there may be a requirement for audio/visual alarms.

2.9 The designer could usefully discuss his proposals for security with the officer in charge of the Local Police Crime Prevention Department and, at the same time, with a hospital or district security officer or adviser if one is employed by the Health District. Contact should be made early, preferably at the outline stage of the building design, at the same time that Fire and Safety Officers are consulted; this should enable an early resolution of the sometimes conflicting demands of security and fire safety.

Internal spaces

2.10 Internal rooms may contribute to economy in planning but the resultant additional artificial lighting and ventilation which may be necessary will add to both capital and running costs. Such rooms are not conducive to good working conditions. They are suitable for use only as supporting service rooms or as spaces which are either infrequently occupied or demand a controlled environment. Rooms which are likely to be occupied for any length of time by staff or patients should have windows. Office staff may be difficult to recruit or retain if office areas do not have an external outlook.

Courtyards

2.11 Courtyards will enable more rooms to receive natural daylight and ventilation. Although many such courtyards look very bleak, skilled design and intensive planting appropriate to the micro-climate can provide a stimulating outlook from patients' bedrooms or dayrooms and from staff areas, which will compensate for the lack of a longer view. Privacy in surrounding rooms can be preserved by suitable layout and planting. Ground cover planting is often more successful than grass and is easier to maintain. It is desirable to provide access to courtyards wherever possible, from dayrooms; thresholds should be designed to facilitate ease of manoeuvering by patients in wheelchairs and those who have difficulty in walking. Seating should be provided. Access for maintenance should be from a hospital street or other corridor so that patients and staff are not disturbed. Adequate services should be provided in all courtyards for irrigation, power and possible lighting. In suitable circumstances, courtyards could be made use of as children's playgrounds. (2.108) Reference should be made to Health Building Note 45 'External Works for Health Buildings'* for more detailed guidance on the subject of courtyards.

Critical dimensions

2.12 The Appendix contains information on critical dimensions for some of the activities mentioned in this Note which are not included in the draft building note 'Common Activity Spaces'. (At the time of writing, a draft of this Note has been made available to the NHS.)

Internal environment considerations

2.13 The following paragraphs give guidance on the main design factors which need to be considered.

Planning and design

2.14 The route from the entrance to the patients' point of destination should be as short and as simple as possible in order to lessen anxiety.

2.15 In the nursing sections the staff should be able to observe the patients for most of the time and the children should be able to see the nurses in order to feel reassured and safe. Planning plays a most important role in this context and the aim should be to place the staff base in the centre of bed and day areas, with utilities and other service rooms being as near as possible to areas likely to accommodate high dependency beds. A safe outdoor play area should, if possible, adjoin the indoor day area. The entrances should be visible to staff, in the interests of security and to prevent children straying.

2.16 In addition to planning patients' areas in the immediate vicinity of the staff base for better observation, it is necessary for most of the partitions and doors to be glazed down to a height of a toddler's vision at about 600 mm to 800 mm. Similarly, window sills should be low enough to enable small children to look out without climbing on chairs or beds.

2.17 Many parents are now staying with their children during the day and during the night. Their requirements for sleeping, resting, toilet and bathing facilities and access to a beverage point all have planning implications.

Safety

2.18 Safety is a factor that must be taken into consideration in the design, layout, siting, and equipping of all parts of the hospital to which children have access. The possibility of dangerous situations arising through human error, on the part of visitors or staff, needs to be anticipated as far as possible and measures taken to avoid their occurrence. At the same time, safety measures should not cause avoidable inconvenience nor impair efficiency. Within the patient area itself the best deterrent to mishap is an unobstructed view of all areas.

2.19 Appropriate safety measures are those which make it as difficult as possible, if not impossible, for young children to enter accommodation which might contain equipment or material likely to be harmful to them. Such accommodation and items of possible danger include:

a. kitchen and beverage areas where there are cookers, hot plates and heated food trolleys;

b. utility rooms, cleaners' rooms, stores and any other areas where drugs, lotions or cleaning fluids may be kept (disinfectants and cleaning fluids must be treated as poisons and kept in locked cupboards);

c. disposal areas where potentially infected rubbish is held;

d. treatment rooms or other areas where medical or surgical equipment may be kept;

e. doors and windows;

f. low-level engineering terminals;

g. lifts and paternosters.

Other aspects which need to be considered are the possibility of limbs or heads being trapped in fittings etc, hazards from lift shafts, stairwells and fixed equipment, danger from broken glass and deep water, interference by outsiders and children straying from the department.

2.20 Doors to kitchens, utilities etc should have high-level latches as specified on the appropriate Activity Data sheets.

*In preparation

2.21 Safety glass should be used in all partitions and doors. Windows overlooking an outside play area should not open outwards; children playing outside might be injured by running into the projecting part of the window. Windows should be fitted with restrictor devices.

Lighting

2.22 The overall impression of interior spaces should be light and sunny; this can be achieved by correct orientation, design of windows and a minimum of solid walls and partitions. Reflecting surfaces, glazed partitions and low window sills will transmit and disperse daylight throughout the department. However, excessive sunlight, glare and solar heat can be dangerous and cause severe discomfort, particularly to patients in cots and beds; it can be dangerous if there is direct sunshine on incubators or oxygen tents. There is therefore a need for careful control by means of screens and curtains.

2.23 Artificial lighting is important and a balance is required between the level of illumination, ie the quantity of light, and its quality as affected by the type and position of the luminaires.

Finishes and fittings

2.24 Designers should aim to create an interior which is comfortable and pleasant to look at in order to reassure and stimulate the children who, in addition to being ill, may be suffering from the effects of separation from home and family. The use of light colours combined with a carefully balanced selection of patterns will help to achieve this. In the assessment unit, it will provide the right background and conditions for the various aspects of the assessment process. In the treatment room suitable artwork on walls and ceilings will attract the child's attention and help to lessen anxiety.

2.25 Floors and the lower parts of walls and partitions are the surfaces with which smaller children are normally in contact. The finishes, including floor coverings in day areas (see the Report of the Floor Covering Study Group issued with HN(78)32 (WHN(78)92 in Wales)) should be compatible with the need for comfort, cleanliness and safety, particularly with regard to low-level engineering terminals and glass in partitions.

2.26 The choice of fittings and furniture should form an intergral part of the designing process and should be co-ordinated within the overall design scheme. The selection of some fittings and furniture needs to take account of the small size and reach of the patients; positioning of basins, mirrors, shelves and worktops must also be appropriate. Light colour wood furniture, light coloured upholstery and the avoidance of sharp corners, are features desirable in the children's accommodation.

Corridors*

2.27 Corridors play an important part in creating a welcoming and homely environment in hospital. Long, uninteresting corridors are undesirable. Where possible, corridor design should incorporate measures to make corridors more interesting. These could include reducing the length, introducing changes in shape through waiting spaces and lobbies, introducing daylight, providing interesting views on to outside areas such as to landscaped courtyards, variations in colouring for walls and by the judicious use of pictures, murals and children's paintings.

Murals and childrens' paintings can help to make a corridor more interesting.

Heating and domestic hot water supply

2.28 Because of the age range of children accommodated, the temperature in the bed areas and bathrooms must be capable of being varied between 21°C and 24°C.

2.29 Heating should be available during the summer months for use on cold days, especially in the nursing sections, day space, patients' sanitary accommodation and in rooms where patients will be changing or likely to be undressed, eg admission room and treatment room. Exposed surface temperatures of heat emitters and pipework in patient areas must not exceed 43°C.

2.30 Attention is drawn to para 3.32 concerning the requirements for distributing the domestic hot water at a temperature of 52°C ± 2°C.

*Refer to Common Activity Spaces Volume 2 building note (in preparation)

Ventilation

2.31 The accommodation should be naturally ventilated wherever possible, but some spaces will require mechanical ventilation to satisfy specific requirements. Mechanical ventilation is required in the in-patient treatment room and in two single bedrooms to facilitate the control of airborne infection. (2.95 - 2.97)

2.32 Natural ventilation is usually caused by the effect of wind pressure. It can also occur to a lesser extent if there is a temperature difference between inside and outside the building and this particular pattern frequently predominates when the wind speed is low. Ventilation induced by wind pressure can promote high air change rates through cross ventilation if air is able to migrate freely within the space from windward to the leeward side of the building. Quite often internal partitions, fire compartment walls and closed doorways etc can impede the flow path and when this happens the process will be restricted to single-sided ventilation. However, even with this degree of obstruction, adequate ventilation can still be obtained without necessitating large window openings. Some types of windows, eg vertical sliding, can enhance single-sided air exchange by temperature difference and these will improve the overall rate of natural ventilation in protected or sheltered areas where the effect of wind is likely to be minimal. BS 5925 — a code of practice for design of buildings provides guidance on this subject. Particular care should be given to the type of window opening selected in naturally ventilated nursing sections to allow air infiltration without prejudicing safety, security or comfort.

Out-patient accommodation

Overall needs

2.33 The hospital's main out-patient department provides a consultative service for the community to which patients are referred for specialist advice regarding investigation, diagnosis and treatment. A steady rise in the number of children attending hospital as out-patients for the diagnosis and/or treatment of acute medical or surgical conditions reflects the increasing acceptance of the need to avoid treating them as in-patients. Separate facilities should therefore be provided within the general out-patient department of the DGH for an out-patient consultative service for all children, other than for regional and sub-regional specialties.

2.34 For audiology and ophthalmology, children should attend the appropriate clinics in the main out-patient department. Where these clinics are not sited adjacent to the children's out-patient waiting area a separate waiting area for children will need to be provided in the main out-patient department. It is important therefore that these facilities should be planned in close proximity to the children's OPD (see paragraphs 32–37 of the DHSS Design Guide 1974 'Hospital ENT Services' and paragraphs 1.23–1.24, 2.16, 2.24 of Health Building Note 39 'Ophthalmic Clinic').

2.35 Facilities will be required to meet the normal out-patient needs of paediatric medicine, and for other specialties; eg orthopaedics, general surgery and dermatology. It is desirable to arrange separate sessions in the children's out-patient accommodation for those specialties which have sufficient child out-patients to warrant such sessions. Accommodation is thus needed for the consultant paediatrician and his staff, for other specialists including those who visit to attend clinics, and for other staff, eg nursing, para-medical, domestic or secretarial staff, who are permanently based in the section. In connection with those visiting, it should be remembered that the catchment area for the children may extend beyond the district served by the DGH.

Planning relationships

2.36 The children's out-patient facilities should form part of the hospital's main out-patient department but should be planned so that the services for the children can be provided separately. It is important that the facilities are located so that there is easy access to specialist accommodation for ENT, ophthalmology, orthopaedic, fracture clinic and plaster room as well as the support services of the main out-patient complex to be used at times by children. Children should also share facilities provided for adults such as those in diagnostic X-ray, pathology and for older children rehabilitation (paragraph 18 of the Design Guide, Department of Rehabilitation, 1974). If planning permits the children's element of the out-patient department should be sited in close proximity to the children's in-patient accommodation to enable more effective use to be made of staff and the development of a more co-ordinated service.

Out-patient visits

2.37 The child, usually accompanied by a parent and often by other members of the family, will normally enter the hospital by the main OPD entrance from which well-placed and clear signposting should direct them to the children's out-patient reception desk. From there, signs should direct them to easily identifiable areas and rooms within the out-patient department.

2.38 Mothers who have to feed their babies will require appropriate facilities to do so, easily accessible from the waiting area, including provision for warming feeds and for nappy changing. These should be sited for use also by mothers attending the general out-patient department.

2.39 Other factors to be taken into account are:

a. children need to be protected from unpleasant sights and sounds;

b. special safety considerations need to apply where young children are concerned;

c. some of the child patients will be in wheelchairs;

d. access to pram and wheelchair parking facilities are needed either adjacent to or within the waiting space;

e. signposting should take into account the needs of local ethnic minority groups: it should be simple so

that parents have no difficulty in finding the way to other departments, such as diagnostic X-ray.

2.40 On arrival at the children's out-patient reception desk, families are likely to be directed to the waiting area, where suitable play material should be available for the children. The child will be weighed and measured, if required, and the family will proceed to the consulting/examination room. After consultation, appropriate investigation, treatment or therapy will be arranged. The family will then return to reception and book the next appointment if necessary.

Assessment of requirements

2.41 Doctor sessions should be used for estimating the basic accommodation for the children's out-patient consulting facilities. The term "doctor session" covers any session (half-day) conducted by a clinician who holds a consultation with a patient: for example, a clinic conducted by a consultant assisted by a registrar would count as two "doctor sessions". The calculation of sessions does not include additional members of a team, eg house officers who are working under the direct supervision of the consultant and not seeing patients on their own (see HBN 12 Out-patient Department).

2.42 In a typical district with a 200,000 population and an average proportion of children, it is estimated that 27 to 30 doctor sessions are required, ie three examination/consulting rooms - used five days per week. This assumes that all the major specialties treating substantial numbers of children will hold children's out-patient sessions in these rooms. The requirements of any particular district will, however, need to take account of local operational policies.

2.43 The detailed accommodation requirements are set out in the following section.

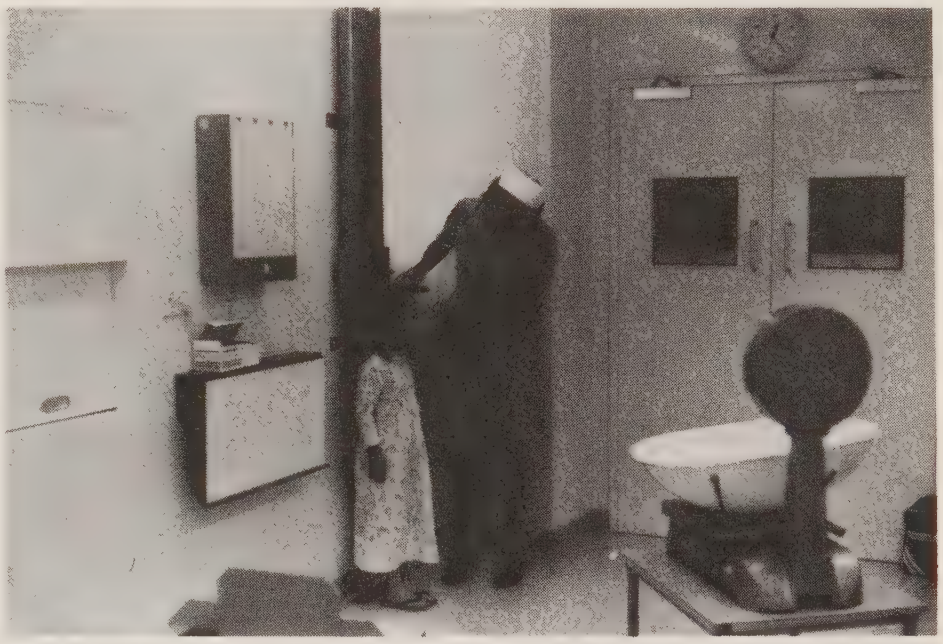
Design and functional requirements

Reception and waiting

2.44 There should be a separate sub-reception area and waiting space for children. Since the child's first point of contact with the hospital is usually the reception area, it should provide a welcoming atmosphere and should be suited to the requirements of children and their families. The reception point should be in a prominent position and overlook the waiting space. Space will be required for the receptionist to complete the patients' registration procedures, to arrange for appointments and transport and other action. Part of the reception area should be partitioned off for use by a secretary. The reception space should have easy access to the main medical records section.

There should be space for children to play in safety.

2.45 The waiting space should be planned in conjunction with the reception point, and furnished with a variety of tables and chairs suitable for children and adults. There should be space for children to play in safety and without being a hazard to others. Suitable toys, display panels and books (with appropriate storage) should be provided for children of all ages. Economy in the amount of waiting space required will be achieved by ensuring that the appointment system is sufficiently efficient to reduce waiting time to the minimum and to prevent gaps between appointments. It can be expected that each child will be accompanied by two other persons.



The weighing and measuring room should have equipment suitable for children of all ages.

2.46 Where facilities for obtaining beverages are not readily available nearby, a beverage machine dispensing a variety of suitable drinks should be provided. Public telephone facilities should be available. There should be adequate signposting.

Mother and baby room

2.47 A room is required mainly for mothers to prepare feeds and to feed their babies but it should also contain appropriate facilities for changing nappies etc and hand washing. As indicated in paragraph 2.38, the room should also be made available for use by mothers attending other areas in the hospital.

Weighing and measuring room

2.48 A room should be provided with equipment suitable for weighing and measuring children of all ages. The room should be easily accessible from both the waiting area and consulting/examination rooms with facilities for ensuring privacy.

Consulting/examination rooms*

2.49 Three combined consulting/examination rooms are required, one of which should be sound-attenuated for use by specialists requiring this facility.

*Refer to Common Activity Spaces building note

A combined consultation/examination room.

A telephone will be required for internal and external use but calls should be intercepted at the reception point. Other facilities required include a clinical hand-wash basin, an adjustable ceiling or wall-mounted light and storage for small items of equipment and sterile packs.

Treatment room

2.50 A treatment room is needed for the application of dressings, and for minor clinical procedures which will be carried out by doctors, nurses or technicians with a parent or parents in attendance. Facilities will include a clinical hand-wash basin, an adjustable ceiling or wall-mounted light and storage space. It is envisaged that sterile packs, syringes and dressings etc will be issued on a daily 'top-up' service from the main out-patient department's clean utility room. The decor should be colourful with children's drawings on the walls and the ceiling, compatible with maintaining the necessary clinical requirements.

Office*

2.51 An office is required for use by the nursing sister/charge nurse. It should be available for use by professional staff attending the unit, eg the community liaison health visitor who has responsibility for children. Any requirement for further office accommodation should be considered in accordance with the recommendations in HBN 18 Administrative Department.

Dirty utility*

2.52 A room is required for the temporary retention of soiled dressings and linen awaiting collection; facilities are required for simple urine testing. Storage space is needed for disposable or reusable items such as bed-pans, potties and urine bottles. A liquid waste sink will be required. Mechanical extract ventilation should be provided. The room should be made secure from access by children.

Sanitary facilities

2.53 There should be three toilets, the WC pan being 350 mm in height. One of the WCs needs to accommodate a wheelchair and should be fitted with rails appropriate for use by handicapped children and another should be suitable for specimen collection. Hand washing facilities should be provided in all WC areas.

Pram store/wheelchair bay

2.54 If pram storage and wheelchair parking facilities are not already available near to the waiting area, an

*Refer to Common Activity Spaces building note

appropriate storage space should be provided with facilities for folding pushchairs to be hung on the wall or deposited on shelves with appropriate locking devices. Walls should be protected from damage by prams.

Shared accommodation

2.55 It is assumed that the children's out-patients will have the use of the following facilities in the main out-patients' department: clean utility, the cafeteria or tea-bar, children's playroom, cleaning accommodation, staff cloakroom and toilet facilities, trolley and wheelchair stores, main stores, porters' and ambulance drivers' accommodation.

2.56 The central medical records department should serve the unit and be within easy reach of it.

Seminars and clinical teaching

2.57 Suitable accommodation provided elsewhere in the hospital should be available for clinical teaching, discussions and seminars.

Comprehensive assessment and care accommodation

Overall concept

2.58 In this Note, the term 'comprehensive assessment and care' refers to the process whereby a child with one or more physical or mental (including behavioural) disabilities has effective multi-disciplinary diagnostic assessments to determine the extent and character of his or her handicaps. The objective is to formulate a continuous programme of management designed to meet the child's special health, educational and social needs and to provide support and advice for parents.

2.59 Comprehensive assessment and care requires a team approach: as well as full medical assessment there needs to be social and psychiatric assessment with contributions from education and social services staff and, as appropriate, from the voluntary agencies. Periodic re-assessments are required to review progress and enlist any further specialist help. It is desirable that the services provided at a comprehensive assessment and care unit should, as far as possible, cover a complete range of examination, decision making and recording functions. This reduces the need for visits to several places, thus minimising the effort required from children, parents and staff. It does not rule out the possibility, as may often be necessary, of more detailed assessment of a particular need for example, psychiatric, educational or social which may take place elsewhere.

2.60 Comprehensive assessment and care also provides support, training and advice for the child's parents and this advice may include genetic counselling and the need for family planning.

2.61 The consultant paediatrician has an important part to play in co-ordinating the comprehensive assessment and care service. He will need to discuss with team members their particular findings, assemble reports and arrange case conferences to enable the relevant professional staff, both in and outside the hospital team, to contribute to the assessment and periodical review of the progress of the particular child so that a programme of management is planned to meet the child's needs.

Waiting/play area in assessment section.

2.62 Children may need to be assessed or reassessed by one or a group of the following:

Consultant paediatrician	Audiologist
Senior clinical medical officer	Child psychiatrist
Paediatric nurse	Consultant in mental handicap
	School nurse
Remedial/Speech therapists	Health visitor
Social worker	District nurse
Psychologist	Educational staff
Family practitioner	(eg educational psychologist, teacher)
Orthopaedic surgeon	
Ophthalmologist	Dentist

However, not all of these would see a child at the same time nor in the same place (see paragraphs 9 and 11 of HC(78)6 (WHC(78)6 in Wales) which was issued with 'Fit for the Future' — the Report of the Committee on Child Health Services).

Planning relationships

2.63 It is recommended that the comprehensive assessment facilities, whilst self contained as far as possible, should be closely associated with the children's out-patient facilities within the main out-patients' department: this will avoid duplication and also achieve the most efficient use of special facilities and staff by the maximum sharing of accommodation and services, compatible with the needs of each. The need for access to the specialist facilities for ophthalmology and ENT in the main out-patients' department should also be kept in mind.

Assessment visits

2.64 The appointment for assessment will have been arranged through the normal out-patient system. After

reporting to the children's reception point, the child and his parents may go first to the waiting/play area and then proceed to the consulting/examination or assessment room when called.

2.65 The purposes of the first visit for comprehensive assessment are usually to:

a. examine the problem for which the child was referred;

b. examine for the presence or absence of other handicaps;

c. arrange investigations and other diagnostic procedures as required;

d. arrange assessment or examination by other members of the multi-disciplinary team;

e. discuss with the family plans for treatment and/or future assessment.

Subsequent appointments should be arranged by the receptionist before the family leaves. The child and parents may return for half or full day sessions for investigation, assessment, training and treatment.

2.66 The period of the initial consultation will vary according to needs but on average can be expected to last about one and a half to two hours. During consultation the paediatrician may wish to have a discussion with the parents and for this period the child may need to be occupied in the waiting room.

Scale of provision

2.67 As the size of the district and the incidence of handicapping conditions in children vary in different regions, it is not possible to formulate specific requirements suitable for all localities, and each authority must assess its requirements in the light of its own particular circumstances. However, as a guide, the facilities recommended in this Note are considered to be reasonable for the provision of an effective service to meet the needs of a population of at least 200,000.

Design and functional requirements

2.68 The following paragraphs give guidance on:

a. the additional accommodation required when the comprehensive assessment and care facilities are situated in the preferred location in association with the children's out-patient facilities within the main OPD;

b. the total accommodation required when the comprehensive assessment and care facilities are located elsewhere.

Assessment room with one-way viewing panels.

A – When associated with the children's out-patient facilities within the main OPD

Assessment/observation/remedial therapy treatment rooms

2.69 Two rooms with a shared viewing space will be required for assessment, observation and remedial therapy treatment purposes by members of the multi-disciplinary team. The procedures include observation of children's responses to adults to given situations and to their interaction with other children: there will also be observation of children's performance in free play by the teacher, nursery nurse and/or psychologist (or psychotherapist in some instances). Simple free field testing of hearing, sight and speech will be carried out; more thorough investigations would be carried out in the appropriate clinics of the main out-patient department. The assessment/observation/remedial therapy treatment rooms will also be used for group activities organised by the teacher and others, for special training or discussion sessions for parents of handicapped children, and for appropriate treatment by the physiotherapists and/or the occupational therapist.

2.70 A clinical atmosphere should be avoided. Furniture should include semi-easy chairs, a variety of tables/desks and nursery furniture, as well as shelves and cupboards for the storage of equipment, toys etc. Pin and chalk boards (which should be wall-mounted and low level) and a mobile mirror are also needed. There should be facilities for play, including sand and water, and remedial therapy. Hand washing facilities are required.

Viewing room

2.71 A room should be provided between the two assessment rooms with one-way viewing panels into them and recording and listening equipment so that the activities of the child can be observed and recorded as required. This room should contain shelves and tables for the recording equipment, eg tape recorder, loudspeakers etc used in connection with the microphones in the assessment rooms. A two-way speech system and video equipment may be needed. The room should be sound-attenuated and special attention to ventilation will be required if it is an internal room.

Offices*

2.72 Three general purpose offices will be required for use by professional staff of the assessment service. One of them should be large enough to accommodate up to 12 persons for case conferences and seminars; darkening facilities, eg curtains, should be provided.

Storage

2.73 Space is required for the secure storage of equipment and toys used in the assessment rooms and for other general items such as linen, disposables and stationery. Expensive equipment used for tests and demonstrations should be stored separately, preferably in a lockable cupboard, from other bulky equipment such as wheelchairs, sand-container, chairs, art materials, general supplies and toys. Provision should conform to the general hospital policy for the storage of supplies.

Waiting

2.74 Waiting space is required for patients and parents attending the comprehensive assessment unit. The requirements are as described in paragraph 2.45.

Dining facilities

2.75 For clinical reasons, a small dining area should be set aside within the waiting area where parents and their children who are attending for whole day sessions can have their morning coffee, tea and midday meal. A dining table, a few stacking chairs, storage for a small amount of cutlery, crockery and dry stores and facilities for the preparation or dispensing of beverages are required. The catering services will depend on the hospital policy.

Sanitary facilities

2.76 Two WCs are required, one of which should be suitable for handicapped patients in wheelchairs and one with parents assisting.

2.77 A small area en suite with the assisted WC is required for the toiletting, cleansing and changing of the incontinent older child. Clinical hand-washing facilities are required and a small couch and chairs should be provided. The dirty utility room should be accessible from this area.

Shared accommodation

2.78 It is assumed that the unit will make use of the following facilities in the children's out-patient department; reception, consulting/examination rooms, dirty utility, treatment room, weighing and measuring room, pram store.

2.79 This guidance also assumes the use of accommodation in the main out-patient department on a similar basis to that indicated in paragraph 2.55.

B – When not associated with out-patient accommodation

Accommodation required

2.80 Where a comprehensive assessment service is being developed by addition to existing premises for children and it is not possible to locate the accommodation adjacent or near to the existing child out-patient facilities, accommodation similar to that described under A above will be needed, but with some additions. The accommodation for a unit of this nature will depend upon the extent to which existing accommodation can be shared or used but that provided should not exceed the following;

a. reception, waiting, dining as needed (2.44–2.46, 2.75)

b. two consulting/examination rooms, one of which should be sound-attenuated, if not available elsewhere (2.49)

*Refer to Common Activity Spaces building note.

c. two assessment/observation/remedial therapy treatment rooms (2.69–2.70)

d. viewing room (2.71)

e. three offices, one of which should be suitable for holding small group discussions or seminars, for use by medical, nursing, secretarial and other staff of the unit and by social workers or other staff attending (2.72)

f. three WCs for patients and relatives, one of which should be of the assisted type with facilities for changing etc (2.76–2.77)

g. small dirty utility (2.52)

h. toilet/cloakroom facilities for staff, if not available near by (2.134)

j. storage (2.73)

k. secure storage for prams if necessary (2.54)

l. cleaners' room (2.140)

m. switchroom (2.143).

Note: The design and functional requirements for these spaces are the same as for similar spaces covered elsewhere in this Note to which cross reference is made.

In-patient accommodation

Purpose of a nursing section (ward)

2.81 The purpose of a nursing section is to provide residential accommodation and facilities for:

a. the investigation, diagnosis and treatment of patients, including joint assessment with the primary health care staff

b. play and education

c. rehabilitation to promote mobility and independence of patients, aiming for early discharge

d. parents and relatives of the children.

Beds may be allocated by age or specialty, eg medical or surgical.

Assessment of requirements

2.82 In-patient and day beds should be provided for all children who require treatment for acute medical and surgical conditions (these include otolaryngology, ophthalmology, orthopaedics and general surgery) and for the occasions when handicapped children requiring detailed assessment may need to be admitted for such procedures. It is important that each health authority should assess its own bed requirements as in paragraphs 1.12–1.16.

2.83 Where there is a need to provide for in-patient child psychiatric services this should be planned separately.

In-patient unit

2.84 It is considered that probably no more than 20 beds/cots in a nursing section can reasonably be supervised by one nursing sister/charge nurse at any one time. Appropriate supporting accommodation for doctors, nurses, ancillary staff, parents and visitors will be required. Where there is more than one DGH in a locality, facilities for children should be concentrated as far as possible in one of the hospitals, so that optimum use can be made of medical and nursing staff and other resources.

Planning relationships

2.85 The children's nursing sections should be within easy reach of the operating department and, in particular, the adult ENT nursing section to enable specialist medical staff to move quickly between the sections. The isolation nursing sections should also be near because of the number of child patients who will be nursed there.

Organisation

2.86 Nursing sections should be planned to provide for all levels of medical and nursing care, particularly high and medium dependency. The policy should be for early discharge and the care and treatment of children on a day care basis wherever possible, low dependency care being carried out in the patient's home. There will be occasions when it will be more appropriate for children requiring intensive care to be treated in the hospital's intensive therapy unit (ITU). Liaison should be maintained between the ITU and the paediatric medical and nursing staff; patients should be returned or transferred as soon as possible to the children's in-patient unit. Children with infectious diseases requiring a higher degree of isolation than is provided for in the children's nursing section (2.95) should be nursed in the children's section of an infectious diseases unit.

2.87 The 20 bed/cot nursing section should provide reasonable management scope for the nursing sister/charge nurse and allow various alternatives for the deployment and training of nursing staff. To ensure efficient management, sections should be adjacent where possible.

Bed distribution

2.88 A nursing section of 20 beds should contain 8 single rooms each with a single bed/cot or incubator and be capable of accommodating a divan bed and storage of clothes for a parent. The remaining 12 beds should be arranged in two six-bed areas.

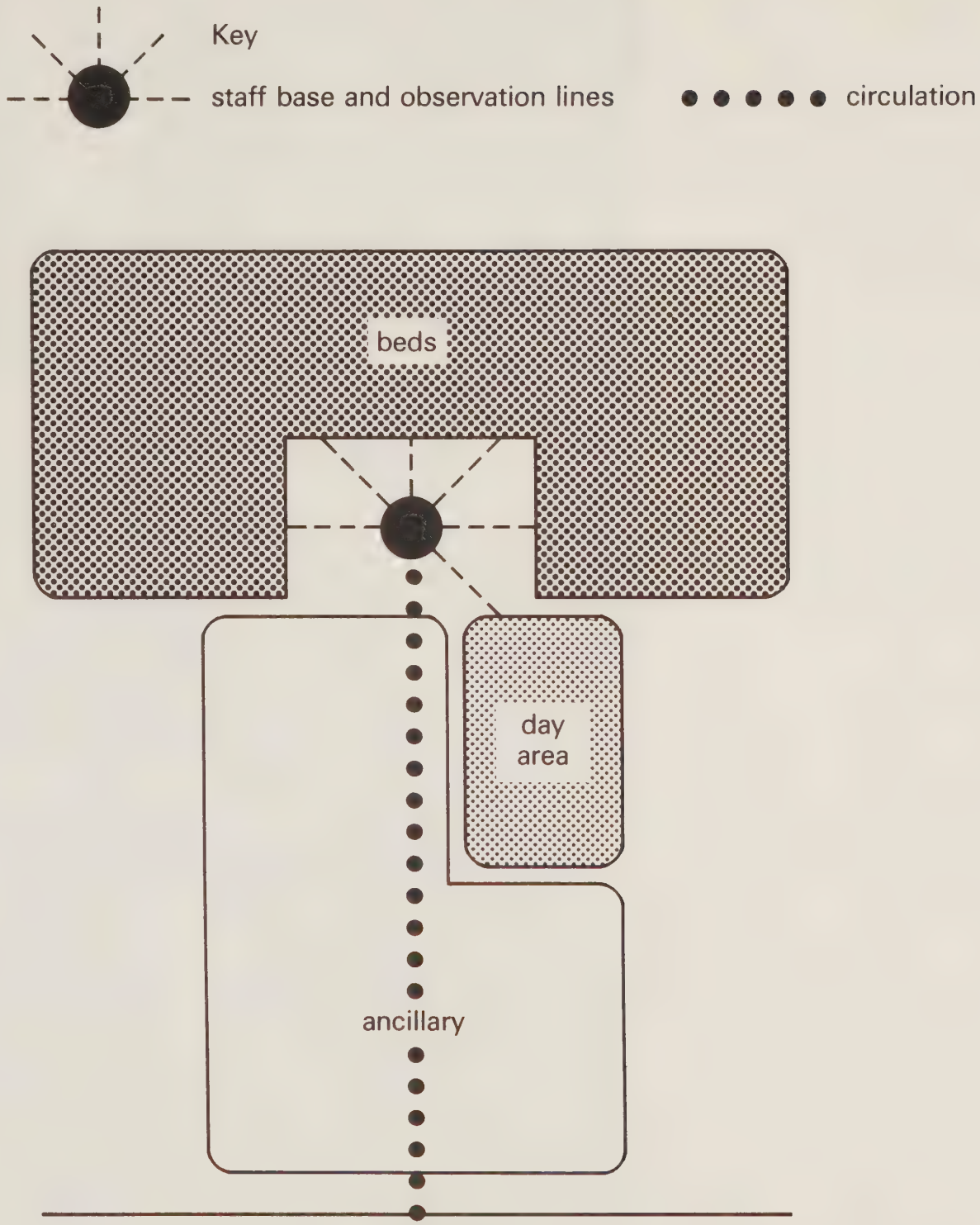
Play/dining etc

2.89 A child needs somewhere to play, to explore or occasionally, to be alone. Each nursing section should, therefore, have a multi-purpose space which can be used for dining, play and also for educational and remedial activities. Where there is a wide range of age groups in a section it may be necessary to have two separate spaces. Ideally there should be easy access to open air play facilities which have adequate safety precautions. (2.106–2.108)

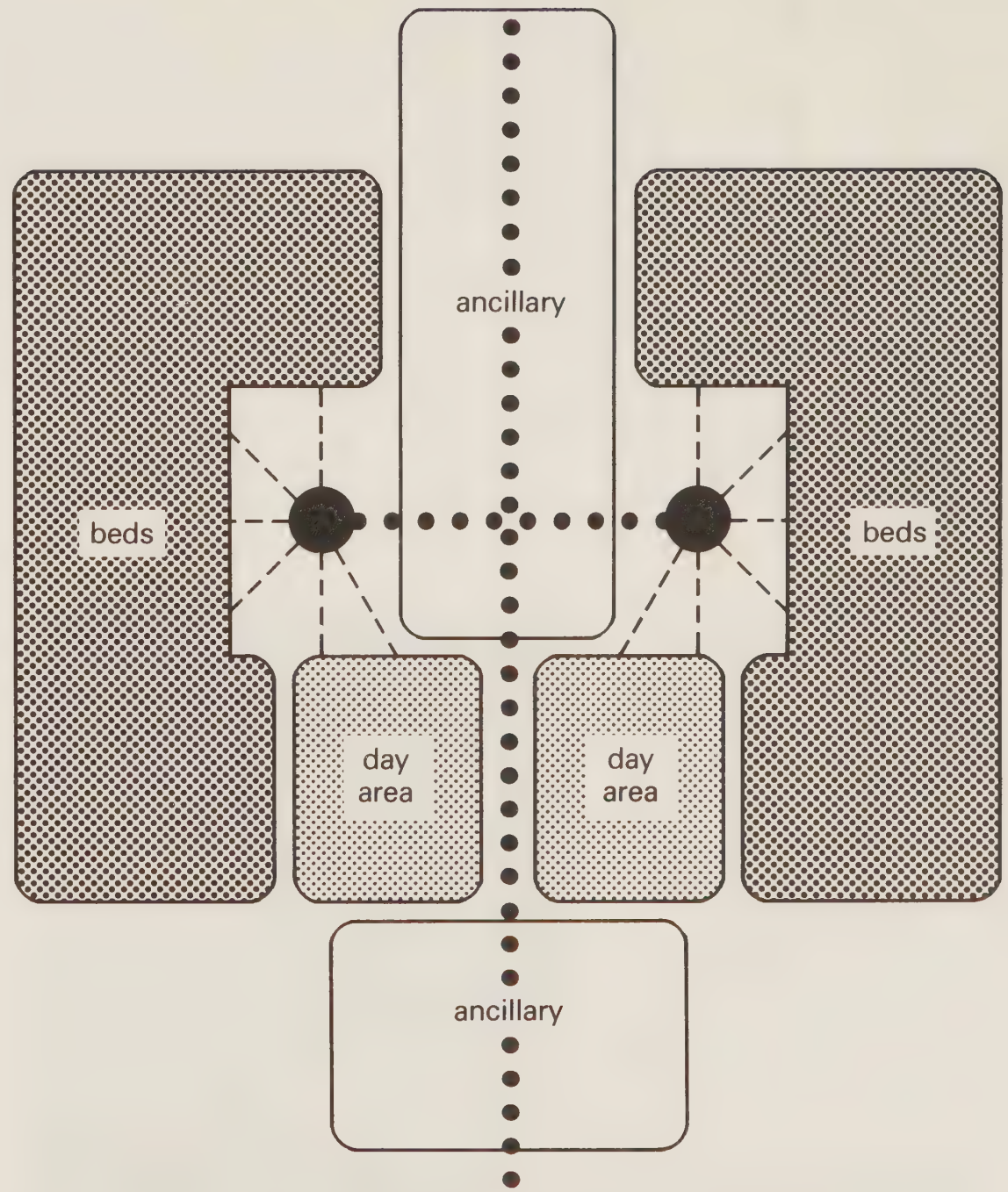
Facilities for parents

2.90 In addition to the accommodation for parents in the single rooms, a sitting room with beverage point and a shower with toilet will be needed. The number of bedrooms, shared between nursing sections, should be determined according to local need and costs are provided under ECA. (4.11)

Figure 4 Clustering of areas within nursing sections



Single nursing section



Double nursing section

Catering

2.91 This Note assumes that:

a. patients will be served by a central food service and that a central wash-up service will be provided;

b. most parents and relatives will use central hospital facilities for main meals, snacks and beverages, but those staying in the hospital should be able to use facilities at section level for the preparation of snacks and beverages when the main dining room or snack bar are closed;

c. staff will use central facilities for main meals, snacks and beverages.

A baby food store/preparation room is described in paragraph 2.138.

Each single bedroom should also have space for a divan bed for use by a parent.

Domestic services

2.92 Nursing section cleaning services will be provided in accordance with whole hospital policies.

Supplies

2.93 It is assumed that items such as sterile supplies, dressings, linen, drugs or pharmaceuticals will be provided from central services in accordance with local policies.

Disposal

2.94 Items for disposal or re-processing will be placed in suitable containers in a disposal room and collected by portering staff in accordance with hospital policies.

Design and functional requirements

Single rooms

2.95 Single rooms may be used for high dependency care of individual patients, small infants, severely ill and dying children, adolescents and children accompanied by a parent. In addition to medical and nursing activities, therapeutic (eg simple remedial exercises), teaching, social and recreational activities will also take place in the single rooms. Source isolation and protective isolation (barrier nursing) facilities should be provided in two of the single rooms.

2.96 Isolation in a single room can be a most disturbing experience for a child. It is important that the child has visual contact with external activities. It is equally important for the staff and visitors to be able to see the child easily. Good observation can be achieved by glazing partitions and doors to below mattress level. Windows and glass partitions should have screening to permit privacy when needed, controlled from within the room.

2.97 The single rooms will be equipped with a hospital bed, cot or incubator. Normal flush-fitting bed head units will be required. Apart from items such as a bedside locker/wardrobe, space will be needed for the use of bulky equipment (eg a ventilator) and a mobile baby bath and for the use and storage of toys and books. The rooms should be large enough to accommodate additionally a divan bed and other furniture for the use of a parent. Each single room

A multi-bed room. There should be space for children to play and have contact with each other. Display boards for children's paintings and decorative curtains contribute towards a comforting and relaxing atmosphere.

should have outlets for oxygen, medical vacuum and medical compressed air and facilities for clinical hand-washing. Two of the rooms should be provided with a WC and shower en suite and should have a system of mechanical ventilation to facilitate source isolation and protective isolation nursing when this is required. Ventilation to the other rooms should be such that airborne transmission of infection to and from adjoining rooms is minimised.

Multi-bed rooms

2.98 Multi-bed rooms lessen the risk of cross infection and allow flexibility for the segregation of different types of patients, eg adolescents.

2.99 The bed space will be required to accommodate various patient, medical and nursing activities and, where necessary, the use of mobile equipment within the privacy of the curtained zone. The minimum dimensions of each bed space should be maintained at 2.5 m x 2.9 m (long axis of bed) and there should be no intrusions into this space. The access dimension for movement of staff, patients and equipment, when the curtains are drawn around opposing beds, should be a minimum of 900 mm. Clinical hand-washing facilities are required within the multi-bed space and it is essential that the space for this activity should not impinge upon any of the individual bed spaces.

2.100 The rooms should be planned with large glass panels in the partition walls and doors so that the nurse can see from the circulation area and from room to room; the glass partition should commence at between 600–800 mm from floor level so that children lying in bed may also see into other rooms and the circulation areas. Blinds or curtains should be provided within the room to cover the panels when privacy is required. Ceiling-mounted curtain tracks to enable curtains to be drawn around the bed will be necessary. Curtains are required at windows to protect the patients from glare and solar gain.

2.101 A bedside locker/wardrobe with space for hanging and storing clothes should be provided. If a separate wardrobe is provided, each patient will require a bedside locker in addition. The bed areas should be large enough to enable a child to play, to explore, to have contact with other children and to accommodate a variety of therapeutic (eg simple remedial exercises), teaching and social activities. Books and toys should be freely available, placed on low shelving within easy reach of children. In addition, children should be encouraged to bring into hospital familiar and cherished toys and objects of comfort. Display panels for the child's paintings etc should be provided at each bed.

2.102 Piped oxygen, medical compressed air and medical vacuum outlets will be required in each multi-bed room — an average of four outlets to six bed places sited so that all beds may be served. Each bed space will require two socket outlets but, in the area where small babies are nursed and high dependency care is to be given, the number may need to be increased. Each room should have clinical hand-washing facilities.

2.103 WC and personal washing facilities are required in association with each multi-bed space. Access to them should be from outside the multi-bed space to avoid disturbing other patients, particularly at night. The travel distance from each space to WC facilities should not be more than about 12 metres.

Sanitary facilities

2.104 Washing, bathing and WC facilities should be provided on the basis of one WC to every four children and one bath/shower to every five children. Handrails for use by handicapped children should be provided. Hand-wash basins, mirrors, towel rails etc should be of an appropriate height for children. However, domestic type baths and showers should be provided. There should be space for wheelchairs, sanitary chairs and lifting devices. The design should take into account practical considerations of the child moving from a wheelchair on to a toilet seat and the need very often for an adult to be present. Careful siting of the hand-wash basins and of the entrance is also needed.

2.105 WC lavatory pans (350 mm) should be provided; small children will use potties (a child's own should be accommodated if necessary). WC compartments must offer privacy and should be large enough to accommodate a wheelchair or a sanitary chair and to allow an adult to assist a child. Appropriate sanitary arrangements should be made for older girls. Doors should be fitted with a mortice indicating bolt with an emergency release plate fixed out of reach of young children. Toilet areas should be easily and immediately accessible to children and visible to nurses, reducing the need for personal supervision.

Play/dining/education etc

2.106 This multi-purpose space should provide facilities for play, dining, education (2.122–2.125) and recreation. The likely wide range of age groups in a nursing section increases the need to plan two separate parts conveniently situated and suitable for children of varying ages.

2.107 Tables and chairs suitable for the range of ages likely to use the accommodation should be provided. Ease of access for wheelchairs, beds and cots is essential. Storage should be provided for toys and other bulky items, and materials such as paint, paper and clay. A lockable cupboard is also needed for the storage of play items requiring a degree of security. A small sink is required. Open bookshelves and shelves for toys will be needed at heights appropriate for children and part of one wall should be covered with a chalk-board for use by younger children. A fitted mirror should be provided. A trolley with raised edges is needed to move play equipment to children who are confined to their beds. Portable room dividers may be required in order to organise some activities within the play room.

2.108 Where possible, there should be direct access to a safe outside play area. Particular attention should be paid to the need for ease of supervision, the security aspect of possible outside interference or children wandering away, and the design of doors leading to the outside which should allow patients in beds and wheelchairs to be wheeled out. A sunny and sheltered

position is desirable for the children's playground. This should be considered preferably in the early planning stages.

Clean utility*

2.109 Provision is required for storage and preparation of drugs, medicines and lotions and a working supply of clean and sterile supplies. Space is needed to assemble equipment for clinical procedures and to park the dressings and medicine trolleys. This area should be overlooked by and easily accessible from the staff base but inaccessible to children. A half-glazed door with high-level latches should be provided.

Dirty utility*

2.110 Dirty and used goods can be cleaned in the dirty utility room, if necessary, or stored temporarily before transfer to the disposal room to await collection. Facilities for simple urine tests, with a lockable refrigerator for the storage of specimens, are required. Provision is needed for storage of a working supply of disposable or non-disposable bed-pans, potties and urine bottles and the maceration or washing and disinfection and disposal of containers and contents. Mechanical extract ventilation should be provided. This room must be inaccessible to children.

Storage

Linen

2.111 Each nursing section will need a store for holding its own day-to-day working stock of linen with sufficient space for blankets and pillows and space for a linen trolley: a topping-up system is assumed.

Clothing and general storage

2.112 A multi-purpose space is needed for the storage of items in everyday use and for children's clothing.

2.113 There should be adequate hanging space for children's clothing of different sizes and compartmentalised shelving for items such as cardigans, underclothing and woollies.

Staff base

2.114 The staff base is the focal point for all members of staff for the administration of the nursing section and also for the reception of patients. The staff base in each section should be sited to ensure maximum observation especially of the high-dependency beds and single rooms; the base should be visible from as many parts of the section as possible. It should be planned as an open area so that the children can be both seen and heard. A patient/nurse and nurse /nurse call system is required. The base should have a desk large enough for simultaneous use by three people. Space is needed for patients' records, stationery, facilities for viewing X-rays and a notice board.

Nursing Sister/Charge Nurse office

2.115 This office should be provided for the purpose of interviewing staff, relatives (who may be in a distressed state) and visitors, and preparing reports. It should be planned within the section and may be sited either near to the entrance or near to the centre of the section.

Pantry*

2.116 The function of the pantry is to provide a base for the distribution of cooked meals supplied from the main kitchen and the preparation of beverages and snacks. Provision for washing up of some items and storage for dry foods, milk and a limited amount of crockery and cutlery is required. The design should ensure that safety in relation to children is taken into account. When there is a single nursing section only, the pantry will also be used for the storage and preparation of baby feeds. Where there is more than one nursing section separate facilities should be provided. (2.138)

Trolley/wheelchair/pram bay

2.117 Provision should be made for the parking of a wheelchair kept for use in the section and for prams for the small children. Temporary parking for one patient trolley may be necessary.

Flower bay

2.118 A small bay is required for arranging flowers. This area should be fitted with a sink and drainer and shelves or a cupboard for storing flower vases.

Shared accommodation

2.119 In addition to the accommodation described above the following facilities are also required, but where there is more than one nursing section these facilities should be shared and not duplicated (see Chapter 4 for schedules showing detailed allocation of shared accommodation). They should be conveniently located for use by the sections sharing the facilities. Sharing may require the enlargement of a space and the provision of additional equipment.

Admission room

2.120 An admission/examination room should be provided for the unit to be shared between sections. It will be required for those children who on occasion will need to be examined, weighed and measured before being fully admitted to the section. Equipment will include an examination couch, a trolley, an adjustable light and clinical hand washing facilities. This room could also be used as an office or interviewing room. Where only one nursing section is to be provided one room could be provided to serve both as an admissions room and doctors' office.

Treatment room

2.121 Minor forms of treatment are usually carried out at the bedside. Some forms of investigations and treatments will need to be carried out in the treatment room to which the child, probably accompanied by a parent, may be brought in his bed or cot. Facilities will be required for clinical hand-washing, and a ceiling or wall-mounted adjustable light and storage space will

*Refer to Common Activity Spaces building note

*Refer to Common Activity Spaces building note

be needed. Oxygen and vacuum outlets with medical compressed air should be provided. Mechanical extract ventilation, sound attenuation, and a nurse/nurse call system are required.

Education Space

2.122 Guidance on the design of education facilities for children in hospitals is given in DES Design Note 'Meeting the educational needs of children in hospital'. A separate classroom may be required in order to enable the local education authority to carry out its statutory duties. Play is regarded as part of a child's educational process and thus one of the functions of the play/dining areas described in paragraph 2.106 will be for education. Where possible one of the play/dining spaces provided for two nursing sections should be adjacent to the classroom: it should be separated from the classroom by a mobile partition or folding door with good sound attenuation so that a single space can be created easily for certain play or educational activities which require greater space.

2.123 When not in use as a classroom the space should be available for use as a day room for children including adolescents and the design should not preclude this function. If necessary a separate space may be provided principally for use by adolescents as a day room and furnished accordingly. This accommodation if provided could also be used from time to time to supplement whatever space is made available for educational purposes.

2.124 The furniture and equipment required for educational purposes needs to be appropriate for the age range of pupils likely to use it, their mobility and type of illness. Responsibility for the provision of furniture and equipment rests with the education authority. Trolleys are valuable aids to the flexible use of space in the classroom and to help teachers to meet the needs of bedside teaching. To avoid having to lock a classroom when not in use and to enable it to be used for other activities when not required for educational purposes, adequate lockable storage should be provided within the classroom area for all equipment including trolleyed equipment and prepared displays which need to be kept secure.

2.125 Some space will be required by the teacher to use as a professional base. This may be provided as a small separate room adjacent to the classroom or at some other convenient location. In any event there needs to be an adequate view of the activities in the classroom. The space may also be useful for one-to-one, or one-to-two teaching activities.

Accommodation for parents

Bedrooms

2.126 In addition to the accommodation available for parents in the single rooms, two bedrooms should be provided for use by those parents or relatives who may wish to, or for whom it may be desirable to, sleep away from their child or for whom accommodation is not otherwise available. The rooms will need to contain two single beds, appropriate storage for clothing and a hand-wash basin. The bedrooms should be close to the nursing sections, and the parents' sitting room and shower/toilet facilities.

Sitting room

2.127 A sitting room should be available for parents and relatives who will need somewhere to relax and have beverages; this guidance assumes that parents and relatives will take main meals in the staff dining room. The room should be pleasantly furnished with tables and comfortable chairs and should be planned within easy reach of the bedrooms. Facilities for the preparation of beverages should be provided.

Sanitary facilities

2.128 A WC and a shower should be provided adjacent to or as near as possible to the bedroom accommodation and easily accessible from the sitting room.

Doctors' office*

2.129 An office is required for the use of medical staff and it should serve two sections. This accommodation is additional to any provided for consultant paediatricians, under HBN 18 - Administrative Department.

Seminar room

2.130 One seminar room shared between two nursing sections and large enough for about 10 persons will be required for medical, nursing and other staff. The seminar room is primarily for the use of the department though it may be available to users on a whole-hospital basis. Facilities are needed for clinical instruction and demonstrations, teaching, discussions and tutorials. As children will be involved with demonstrations, the environment should be as pleasant as possible and compatible with the clinical needs. Activities such as X-ray viewing, the use of slides and note taking will be carried out. A hand-wash basin will be needed. (4.10)

2.131 However, when considering the provision of seminar rooms within the department, account should be taken of similar accommodation available in the hospital's education centre or elsewhere and the extent to which such accommodation is available to the Children's Department. Seminar rooms should not be unnecessarily duplicated within the department if usable facilities are available elsewhere which meet requirements.

Office/interview — other staff*

2.132 Staff from the community, for example, health visitors, social workers, GPs, and visiting consultants will need to make use of an office/interview room. The need to provide additional accommodation for such staff should be assessed having regard to the overall requirements for general administration (HBN 18 — Administrative Department).

Nursing Officer's office*

2.133 This should be sited in association with the children's in-patient nursing sections and have easy communication with the comprehensive assessment unit and the out-patient facilities. (4.10)

Staff changing facilities

2.134 *Centralised changing* — Where staff employed on nursing sections use central changing facilities a

*Refer to Common Activity Spaces building note

small cloakroom should be provided on or adjacent to the nursing section for staff to hang coats and cloaks and to keep personal items secure in small personal lockers. WCs with wash-basins should be provided on the basis of one for each of the nursing sections and closely associated with the cloakroom area. (4.9)

2.135 *Decentralised changing* — When staff do not use central changing facilities full changing facilities are required at nursing section level. Provision should be made for the secure storage of outdoor clothing and personal items and for the temporary storage of damp clothes. It is assumed that uniforms and other clothing will be collected from a central point such as a manned uniform store or an automatic dispenser. (4.9)

2.136 The accommodation for female staff should comprise:

a. full length lockers for the storage of clothing, uniforms and personal items;

b. space for changing and a curtained cubicle for those requiring privacy;

c. provision for the temporary (secure) hanging of wet coats or cloaks.

2.137 The extent to which similar separate accommodation for men will be necessary should be decided locally. A WC, with hand-wash basin, should be provided on the basis of one for each of the sections and closely associated with the changing space.

Baby food store/preparation room

2.138 Where there is more than one nursing section a room should be provided for the preparation of baby feeds by the staff and for teaching a parent how to prepare feeds. It requires adequate space for storage of ready-mixed feeds and feed bottles and facilities such as a sink and drainer, an electric kettle and a refrigerator.

Equipment store

2.139 In addition to the storage space provided on each section, a lockable store is needed to serve the whole of the children's accommodation for the storage of such items as bed sides, beds and cots, oxygen tents, humidifier and oxygen meters, monitoring equipment, intravenous infusion poles and drip-regulating devices. There should be a sub-division to house the more fragile, sophisticated and expensive equipment to ensure it is not damaged.

Cleaners' room*

2.140 Provision is required for the storage of cleaning materials (in lockable cupboards) and equipment in accordance with the domestic services policies. Facilities are needed for emptying and cleaning equipment. This facility can be shared by two nursing sections.

Disposal room*

2.141 A room should be provided for bagged refuse for disposal, linen and equipment for reprocessing to be held for collection. It should be accessible from within the nursing section(s).

*Refer to Common Activity Spaces building note

Resuscitation trolley bay

2.142 One bay is required for parking the paediatric resuscitation trolley. A socket outlet is required.

Switchroom

2.143 This is required for housing the main isolator and distribution switch/fuse-gear for the accommodation. The room should be kept dry and well ventilated and the door should be lockable and open outwards. To minimise the radial length of circuit wiring the switchroom should whenever possible be located centrally within the accommodation. If a medium voltage electricity supply of adequate capacity is available from an exsiting switchroom then sub-distribution cupboards of an equivalent area will be required.

Day patient accommodation

Purpose

2.144 There is an increasing acceptance of the need to reduce the admission of children as in-patients and, where admission is unavoidable, to keep it as short as possible. The investigation and treatment of children on a day basis achieves this and is being carried out in many hospitals; children are especially suitable for day care procedure.

Facilities

2.145 The particular nature of day care dictates the need for specially designed or adapted accommodation. As with other patient accommodation it should have facilities for the reception and treatment of disabled persons who may use the section from time to time. A normal nursing section is not suitable for day care because of differences of patient throughput and associated workload.

2.146 Provision should comprise: two single bedrooms, a 6-bed room, facilities for treatment/examination, staff base with clean utility, dirty utility, pantry, sanitary facilities, facilities for sitting, play and waiting. These facilities are similar to those described for in-patient accommodation.

Location

2.147 The accommodation should be adjacent to or close to the in-patient section. It should have easy access to the operating department, the X-ray department and access to transport facilities.

Organisation

2.148 It is expected that the day patient care section will normally be used from Monday to Friday between the hours of 8 am and 6 pm.

2.149 Children may be admitted as day patients for surgical procedures or for medical treatment or investigation. The children, accompanied by their parents, generally arrive in the morning. In hospitals where two operation lists a day are organised, children may arrive at mid-day for the afternoon session. All pre-

admission preparation will have been carried out beforehand.

2.150 The surgical cases may be taken to the theatre in their beds/cots and post-operatively remain in the recovery area of the theatre until fit for return to the day care section. Investigation and/or treatment may be carried out in the section itself or in one of the diagnostic departments of the hospital.

2.151 Most parents stay with their children and help with their general care. Discussion with relatives on the treatment or follow-up treatment for their children could conveniently take place in a quiet area of the day care section or in an office in the in-patient section.

2.152 The parents' sitting room could be used by parents or relatives while the children are undergoing surgery. Patients awaiting the results of investigation and siblings could play in the in-patient play room.

2.153 When considered sufficiently fit the children will go home from the day care section accompanied by their parents. Occasionally a child may be considered unfit for discharge and will need to be admitted as an in-patient.

Design and Functional Requirements

Staff base/reception/clean utility

2.154 There should be a small staff base, sited near the entrance, which will also serve as a reception point. Storage for files, stationery and records and an X-ray viewing screen are required. From the staff base there should be visual supervision of the bedrooms and the drugs cupboard. A small clean utility bay, where the Controlled Drugs cupboard is located, should be closely associated with the staff base. Storage is needed for clean medical sundries, linen and medical equipment.

Waiting/play

2.155 A waiting and play area is required in the entrance to the unit. This should have a partitioned part for play where observation is easy but where exuberant children do not disturb those in the bed area. The area requires easy chairs, books and games readily accessible from surrounding shelves. Space should be adequate to accommodate four patients and eight escorts.

Single rooms

2.156 Two single rooms are required to accommodate patients and parents. A medical vacuum and oxygen outlet and a socket outlet are required in each room. Facilities for clinical hand-washing should be provided.

Multi-bed room

2.157 There should be a multi-bed room to accommodate six beds. Patients may arrive by wheelchair, stretcher or on foot. Space is required for patients to dress and undress at the bedside assisted by a parent; secure facilities for clothing should be provided. Space is needed within the curtained bed space for treatment and clinical care. Four piped medical gas terminal units, each comprising an oxygen, medical compressed air and medical vacuum outlet, should be located so that all six beds may be served. Facilities for clinical hand-washing are required.

Treatment/examination room

2.158 There should be a room suitable for treatment and examination directly adjacent to the bed area. This room will be used also for specimen collection, parental discussions etc. Equipment will include a treatment couch, a ceiling or wall-mounted adjustable light, clinical hand-washing facilities and storage for small items of equipment, sterile packs, trays and syringes. Oxygen and vacuum outlets should be provided.

Sanitary facilities

2.159 Two WCs with wash basin are required.

Pantry

2.160 A small pantry for provision of simple refreshments for patients is needed.

Dirty utility/disposal room

2.161 A room is required for the disposal and cleaning of items, receiving and testing urine specimens. Storage for bedpans and potties and a bedpan washing/disinfecting machine or macerator should be provided.

Switchroom

2.162 A switchroom similar to that in paragraph 2.143 should be provided.

3 Engineering services

3.1 This chapter describes the engineering services contained within this department and their integration with the engineering systems serving a whole site. Its purpose is not to inhibit the design solution but to acquaint the engineering members of the multi-disciplinary design team with the criteria adopted (in terms of material specification, design conditions and reference material) to meet the functional requirements.

3.2 Documents referred to by number viz[10] are listed at the end of the chapter. They are numbered in order of first appearance, repeated references retaining the same number.

Model specification

3.3 The library of standard specifications issued in the CS[1] series of engineering data sheets is currently being updated and will be re-issued as a model specification for engineering services in health care buildings. The cost allowance for the engineering services in each functional unit of this accommodation is based on qualities of material and workmanship described in the model specification.

Economy

3.4 Engineering services should be designed to obtain the optimum benefits from the capital invested. Where alternative design solutions are available their consequential capital and running costs should be compared using Present Worth techniques[2] due consideration being given to the need for access for maintenance and the replacement of plant and equipment.

3.5 Where design solutions related to economic assessment are undertaken the cost of energy at the point of use should be used; the value of the heat conversion and distribution losses for buildings well dispersed on a site can equal that of the useful energy consumed.

3.6 In the interests of energy management, and where practicable, facilities should be provided at main intake points to this accommodation for the easy attachment of energy measuring equipment, eg meters and thermometers. Engineering Data Sheet DR6[3] describes recent developments in metering techniques.

Maximum demand

3.7 User demand on engineering services is often difficult to predict but experience indicates that services designed for simultaneous peak load conditions are seldom fully utilised in practice. The estimated maximum demand and storage requirement (where appropriate) for each engineering service in this accommodation will need to be assessed individually to take account of building shape, geographical location, operational policies and intensity of use. As a guide and for preliminary planning purposes only, the following are the estimated peak demands for each of the main functional units.

a. Out-patients (within OPD)(4.13)

Service	Typical maximum demand	Remarks
Heating, Ventilation, DHWS	33 kW	
Domestic Hot Water	0.6 litre/sec	Storage 400 litre (2 hour recovery)
Cold Water Supply	0.7 litre/sec	Storage 1250 litre (24 hour supply)
Ventilation (Supply)	0.35 m³/sec	
Ventilation (Extract)	0.35 m³/sec	Clean and 'dirty'
Electrical	11.5 kVA	Essential 4kVA
Medical Gases	No requirement	
Fuel Gas	No requirement	
Steam	No requirement	

b. Comprehensive assessment (not adjacent to out-patient unit)

Heating, Ventilation, DHWS	37 kW	
Domestic Hot Water	0.6 litre/sec	Storage 400 litre (2 hour recovery)
Cold Water Supply	0.7 litre/sec	Storage 1600 litre (24 hour supply)
Ventilation (Supply)	0.31 m³/sec	
Ventilation (Extract)	0.31 m³/sec	Clean and 'dirty'
Electrical	11 kVA	Essential 4 kVA
Medical Gases	No requirement	
Fuel Gas	No requirement	
Steam	No requirement	

c. In-patients (20 bed unit with shared accommodation)

Service	Typical maximum demand	Remarks
Heating, Ventilation, DHWS	83 kW	
Domestic Hot Water	1.2 litre/sec	Storage 1000 litre (2 hour recovery)
Cold Water Supply	1.6 litre/sec	Storage 3300 litre (24 hour supply)
Ventilation (Supply)	0.85 m³/sec	
Ventilation (Extract)	0.85 m³/sec	Clean and 'dirty'
Electrical	25 kVA	Essential 10 kVA
Medical Gases –		
Oxygen	50 litre/min	
Comp. Air	665 litre/min	
Vacuum	75 litre/min	
Fuel Gas	No requirement	
Steam	No requirement	

d. Day patients (8 bed unit)

Heating, Ventilation, DHWS	27 kW	
Domestic Hot Water	0.5 litre/sec	Storage 300 litre (2 hour recovery)
Cold Water Supply	0.6 litre/sec	Storage 950 litre (24 hour supply)
Ventilation (Supply)	0.26 m^3/sec	
Ventilation (Extract)	0.26 m^3/sec	Clean and 'dirty'
Electrical	12.5 kVA	Essential 6 kVA
Medical Gases –		
Oxygen	30 litre/min	
Comp. Air	350 litre/min	
Vacuum	45 litre/min	
Fuel Gas	No requirement	
Steam	No requirement	

Plant rooms

3.8 Recommended space requirements for mechanical, electrical and public health engineering services in health buildings are given in HTM 23.[4] The information in this publication is specifically intended for use during the initial planning stages when precise dimensional details of plant are not available.

Activity data

3.9 User requirements, environmental conditions and equipment arrangements, as exemplified in the Activity Data sheets, (Chapter 5) should be referred to when positioning service components and outlets. Where the latter are for child operation, they should be of the simplest pattern and designed to inhibit interference.

3.10 The distribution of mechanical and electrical services to final points of use should be concealed wherever possible employing a ceiling void and a 200mm wide perimeter zone under window sills. Heat emitters should be contained within the latter and critical dimensions should be taken from the boundary of this zone. For costing purposes the 200mm band which includes the floor area occupied by minor vertical engineering ducts is included in the building circulation provision.

Safety

3.11 Section 6 of the Health and Safety at Work Etc Act 1974[5] imposes statutory duties on all persons who design, manufacture, supply, install or erect "articles" for use at work, to ensure as far as is reasonably practicable that such articles are safe and without risk to health when properly used. Engineering components eg pipework, terminals etc are covered by the term "articles" and thus these duties apply to the designers of engineering services for non-domestic buildings.

Fire safety

3.12 Design guidance relative to the fire safety requirements in new health buildings is given in HTM 81.[6]* Technical information concerning the design and specification of fire detection and alarm systems is detailed in HTM 82[7] which also replaces or modifies certain clauses of BS 5839[8] Part 1 to meet the needs of health care premises. More general advice on fire protection and the fire hazards in various hospital departments is given in HTM 83.[9]

3.13 The design of the engineering services should accord with the recommendations in the above series of HTMs and the engineer should verify his proposals in accordance with the procedure described in paragraph 1.38.

Noise

3.14 Excessive noise in individual areas, whether internally or externally generated and transmitted, is disturbing and can adversely affect the operational efficiency of the department. The means of control advocated in Hospital Design Note 4[10] including its revisions[11] and Engineering Data Sheet DH1[12] should provide an acceptable acoustic environment. Child behaviour can vary between boisterous activity and distress. The acoustic design should therefore incorporate adequate measures to ensure that there is auditory privacy in consulting/examination and treatment rooms particularly where these are located adjacent to public areas.

Control access

3.15 The location of primary engineering distribution control and isolation devices should allow easy access from circulation rather than working areas and they should be protected against unauthorised use, eg concealing switchgear and fuse-boards in secure cupboards.

Mechanical services

3.16 The mechanical services include the provision of heating, ventilation, and hot and cold water supplies and medical gases. For cost allowance purposes the distribution of these services is deemed to commence at their point of entry into the accommodation and includes pipework, fittings, controls and connections to equipment and outlets.

3.17 For environmental requirements in individual spaces, reference should be made to the Activity Data sheets. Recommended room temperatures, air change rates, hot water service temperatures etc are grouped under "Technical Design Data" on each 'A' sheet. The 'B' sheets give the disposition of engineering outlets for the activities described.

Heating

3.18 Above average temperatures in some patient areas and a need for space heating outside the normal heating season are required and the heating system should be designed accordingly.

3.19 General space heating requirements can be met by a low pressure hot water system using natural

*In preparation

convectors or enclosed radiators with the flow temperature adjusted to ensure that the surface temperature of heat emitters in patient areas does not exceed 43°C. All exposed pipework should be protected and emitters should be provided with bottom grilles to prevent accidental contact with high temperature surfaces eg pipe connections.

3.20 Heat emitters should normally be located under windows or against exposed walls, with sufficient clear space between the top of the emitter and the window sill to prevent curtains reducing the output. Adequate space should be provided below wall-mounted emitters to allow cleaning machinery to be used. Where an emitter is located on an external wall, back insulation should be provided to limit the rate of heat transmission through the building fabric. Information regarding the construction of heat emitters, including their mechanical and thermal characteristics, methods of mounting and fixing, variations in pipe connections, problems of cleaning and maintenance, control of output and aspects of safety are given in Engineering Data Sheet DN4.[13]

3.21 To facilitate overall temperature control the heating system should normally be controlled via an external compensator and if practicable zoned relative to each major elevation of the building. Where overheating in individual rooms is likely to occur, eg solar gain, or where for clinical reasons variable room temperatures are required, thermostatic radiator valves should be installed. These valves should be of robust construction and selected to match the temperature and pressure characteristics of the heating system. The thermostatic head incorporating a tamper-proof facility for pre-setting maximum and minimum room temperature should be controlled via a sensor located integrally or remotely, as appropriate. Where space is restricted or heat gains and/or losses are particularly variable, consideration should be given to the provision of thermostatically controlled fan-convectors fitted with low-limit control.

3.22 Where practicable the heating system in the out-patient, day patient and comprehensive assessment accommodation should be clock-controlled and programmed to accommodate the working hours of the unit. The control system, possibly incorporating an optimum-start device, should be used to set-back the space temperature to an anti-condensation level of approximately 10°C when the accommodation is closed (actual set-back to be determined from local trials). To allow for occasional abnormal hours of working, a conveniently sited manual override switch with visual indication giving two hours operation outside the normal clock-controlled periods should be provided for use by authorised staff.

Ventilation

3.23 Recommendations for the ventilation of individual spaces in this department are shown on Activity Data 'A' sheets. Mechanical ventilation systems are expensive in terms of capital and running costs and planning solutions should be sought which take maximum advantage of natural ventilation. (2.32)

3.24 It is acknowledged that planning constraints imposed by the building shape and/or functional relationships of specific spaces will invariably result in some measure of deep-planning. Ventilation costs can however be minimised by ensuring that wherever practicable core areas are reserved for rooms that require mechanical ventilation irrespective of their location (internal or peripheral). Examples are: sanitary facilities, dirty utility, beverage preparation areas, and rooms whose clinical or functional requirements have specific environmental needs and where for reasons of privacy and absence of solar gain etc, windowless accommodation is acceptable. Other spaces appropriate to core areas are those which have only transient occupation and therefore require little or no mechanical ventilation. Examples are circulation and storage areas.

3.25 Air movement induced by mechanical ventilation should be from clean to dirty areas where these can be defined and diffusers and grilles should be located to encourage uniform air movement within the space. The design should allow for an adequate flow of air into any space having only mechanical extract using transfer grilles in doors or walls to connect such spaces to corridors. Such arrangements however should avoid the introduction of untempered air and should not prejudice the requirements of fire safety or privacy.

3.26 An extract system will be required in the in-patient treatment room and beverage preparation rooms. A separate extract system will be required for 'dirty' areas, eg utility and sanitary facilities and a dual motor/fan unit with an automatic changeover facility should be provided to ensure that these rooms are always maintained at a negative pressure when the unit is in use.

3.27 Terminal arrangements for extract systems should be protected against back pressure from external wind effects and located to discharge clear of air inlet points and windows.

3.28 Where deep-planning of continuously occupied spaces is unavoidable there will be occasions when acceptable levels of comfort can be maintained only by air-cooling. Planning solutions of this type will be exceptional and no provision for cooling plant has been included in the cost allowance. Where the facility is required the plant capacity should be limtied to that necessary to maintain an internal temperature of 25°C when the external ambient is 28°C.

In-patient barrier nursing

3.29 As a contribution to the containment of air-borne infection a supply and extract system should be provided in two of the single bedrooms in each in-patient nursing section. The system should be designed to allow each bedroom to be maintained at either a positive or negative pressure relative to the adjacent corridor. A suitable arrangement would provide supply air to each of the bedrooms at a constant volume extracting via the en suite toilet thus ensuring that the toilet is always maintained at a negative pressure relative to the bedroom. To mitigate

source infection the system should extract a volume in excess of that supplied to the bedroom and should incorporate a volume reduction facility to reduce the rate of extract below that being supplied when patient protective isolation is required. The degree of clinical isolation required does not justify an air-lock or the high air-flow rate necessary to prevent infiltration or exfiltration when the bedroom door is briefly opened.

3.30 The fresh air supply should be tempered and filtered before being distributed via high level diffusers designed to avoid discomfort to lightly clad children. Ventilation supply plant should include air filters of 95% efficency against BS 2831[14]; Test Dust No 2. Filters must be readily accessible for replacement and maintenance purposes and provided with a pressure-differential indicator; coarse pre-filters may be justified where the intake air is exceptionally polluted. Heater batteries should be sized for the ventilation requirements only ie not the fabric loss.

Ventilation controls

3.31 Supply and extract ventilation systems should include local controls and indicator lamps to confirm the operational status of each system. Where the use of the system is on a regular daily pattern, a time-switch control with manual override should be considered. Where a system is provided for a particular space the indicator should be in, or immediately adjacent to, that space and, in the case of a more general system of ventilation, eg toilet areas, the indicator should preferably be located at the staff base. Where manual controls are available for staff use they should be provided with labels clearly defining their function.

Hot, cold and drinking water services

3.32 The domestic hot water should be stored at a temperature of 60°C and the distribution controlled at a temperature of 52°C (± 2°C control tolerance), the reduction being achieved by a suitable mixing arrangement at the outlet from the calorifier. The safety of some children could however be compromised if they are allowed unsupervised use of bathing facilities that are supplied with water at this temperature. This risk can be reduced by installing at each bath and shower outlet a locally adjustable thermostatic mixing valve, pre-set and locked to provide a blended water temperature not exceeding 43°C. The mixing valve should be of a type that is unaffected by changes in water pressure and should 'fail-safe' ie automatically close the hot water supply if the cold water supply fails. The provision of one mixing valve to supply a group of baths or showers is not acceptable. Vigilance will still be required to ensure that vulnerable patients using wash basins or sinks are not in prolonged contact with water at a temperature which could be marginally in excess of 52°C. Outlet fittings for wash basins and sinks are shown on Activity Data 'B' sheets.

3.33 Guidance concerning the design and installation of cold water supply pipework and distribution systems is given in HTM 27.[15] For frost protection purposes and to prevent condensation staining the decorative finishes all cold water pipework, valves and flanges should be insulated and vapour sealed.

3.34 Where fully potable cold water systems are not provided a drinking water tap should be provided in the clean utilities, pantries, and all beverage preparation areas. The supply should be direct from the mains or from a protected tank.

Fire-fighting equipment

3.35 Fire-fighting equipment should consist of hose-reels and portable fire extinguishers, and should be positioned so that adequate cover is given to the whole interior of the department. Hose-reels, in accordance with BS 5306 Part 1[16]; and usually with 30m of hose, should be located so that the jet of water from the fully extended hose is capable of reaching every point on the floor area without interruption after due allowance is made for furniture and fittings. In addition to hose-reels 9-litre water extinguishers should be provided on the basis of one extinguisher per 200m² of floor area with a minimum provision of two extinguishers per fire compartment. Carbon dioxide extinguishers should be provided to cover electrical risks but for other risks, eg ignited liquid or gas, either carbon dioxide or dry powder extinguishers are appropriate. Extinguishers should comply with BS 5423[17] and further guidance concerning their selection and use is given in HTM 81[6]. (3.12)

Piped medical gases and vacuum

3.36 Information and design guidance regarding medical gases is given in HTM 22[18] and any subsequent published amendments. The location of outlets is indicated on the Activity Data Sheets.

Electrical services

3.37 The electrical installation will include main intake switchgear and wiring and equipment for lighting, power, and environmental plant. Extensions from the hospital central systems for telephones (conduits only), fire alarms and staff location services, together with separate call systems, will also be required. These installations should comply in all respects with the current Regulations for Electrical Installations[19] and conform to the requirements of HTM 7.[20]

3.38 Reference should be made to the Activity Data sheets for the recommended levels of internal illumination, disposition of outlets for power, telephones, call systems, and clocks etc in individual spaces.

3.39 The point of entry for the electrical supply will be a departmental switchroom housing the main isolators, and the main distribution equipment. The switchroom will also be the distribution centre for subsidiary electrical services and, wherever possible, all equipment should be mounted at a height to give easy access from a standing position. The switchroom should be located so as to minimise the cost of cabling required to serve the acommodation.

Electrical installation

3.40 The electrical installation in occupied areas should be concealed using PVC insulated cable in

screwed steel conduit, or trunking. Steel conduit and trunking trays for communication systems should also be concealed wherever possible.

Electrical interference

3.41 Guidance concerning the avoidance and abatement of electrical interference is given in HTM 14[21] and switch-start fluorescent luminaires (lighting fittings) should comply with BS 5394.[22]

Lighting

3.42 Practical methods of lighting the various functional spaces are contained in the CIBS Lighting Guide[23] and the choice of luminaire should take account of the requirements of light distribution, and visual comfort appropriate to the space. Luminaires should be of a type which can be easily cleaned and maintained. Their location should be readily accessible for lamp changing and maintenance, but with the overriding requirement that the recommended standard of illumination is provided at the point of work. Luminaires using fluorescent lamps should be installed when artificial lighting is required for long periods; intermittently used luminaires may be fitted with tungsten or compact fluorescent lamps. For further information concerning standard reference luminaires for use in health care buildings, see Engineering Data Sheet DE 1.[24]

3.43 It is essential that fluorescent lighting in clinical areas is derived from one of the recommended types of lamps having suitable colour rendering characteristics.[25] In such areas the colours chosen for walls, floors and ceilings should be carefully selected; architects and engineers should collaborate to ensure that the decorative finishes are compatible with the colour rendering properties of the lamp and that spectral distribution of the resulting luminous flux is not adversely affected.

3.44 Control of lighting is normally by local switches and these should be provided in sufficient numbers to allow variation in lighting intensity eg reduced levels of illumination when circumstances permit, and to encourage energy conservation. This is particularly relevant in rooms where, because daylight is restricted, supplementary artificial lighting is required for long periods in areas remote from windows. Although Activity Data 'A' sheets often recommended higher standards of llumination for spaces that are deep-planned, excessive contrast with adjacent areas outside the hours of daylight should be avoided.

Lighting in bed areas

3.45 The standard of illumination provided at the bed-head (at normal bed height) by the general lighting should be 30–50 lux. The illumination in the centre of the nursing section (ie the walking space between bed-ends) should be not less than 100 lux. Additionally, a ceiling or high level wall-mounted fixed-arm luminaire should be located above each bed-head to provide an illuminance of 150 lux for reading purposes. The shades of wall-mounted luminaires in multi-bedrooms may be adjustable, but movement should be limited to prevent disturbance to other patients and the luminaires should comply with BS 4533,[26] particularly Section 1.2 concerning limiting temperatures.

3.46 Night lighting and facilities for low-level lighting at the staff base are not required in the day patient accommodation. Night lighting in the in-patient areas should be to the higher standard of 1 lux at the bed-head.

3.47 The avoidance of glare from general lighting luminaires is important and their lamps should be screened from direct vision of a patient in bed to a limiting luminance of not more than 1800 candelas per m^2 (700 candelas per m^2 for recessed ceiling-mounted luminaires). These restrictions should also be applied to luminaires in corridors and circulation spaces which are visible from beds through unscreened glazing.

Treatment rooms

3.48 A ceiling or wall-mounted double-arm examination luminaire with a fully enclosed lamp housing should be located above the couch. The luminaire should be adjustable in pitch and rotation to allow the beam to be directed locally and should provide reasonably shadow-free illumination with negligible heat development. Recommended illuminances are 1000 lux at the couch from the exmination luminaire, and a general illumination of 400 lux for the performance of ancillary tasks.

Corridor lighting

3.49 The lighting of corridors and circulation areas, not covered by Activity Data sheets, should be to an average level of 100 lux, measured at floor level, and should also comply with colour rendering and glare limitations. Mounting luminaires longitudinally along a corridor, centrally, or to one side to assist compliance with glare limitations is acceptable, as also is the occasional transverse luminaire to mark major corridor junctions or unavoidable changes in floor level.

Amenity lighting

3.50 The remaining lighting in the accommodation should be to the levels shown on the Activity Data sheets with luminaires located and fluorescent luminaires oriented where appropriate to achieve task illumination. Because of the significant effect of lighting on interior design and amenity the final choice of luminaire should be acceptable to both the architect and engineer.

Bed-head units

3.51 A flush-mounted bed-head unit should be provided for each bed position in the in-patient and day patient accommodation. It should incorporate a 13 amp socket-outlet and a patient/nurse call re-set switch, nurse/nurse emergency call, master control of reading light, radio/television sound reception facilities (3.70) and a multi-way socket for a patient hand-set. Further guidance is given in Engineering Data Sheets DU 1.1/17[27] and DU 2.1/3.[28]

Controlled Drugs cupboard

3.52 In compliance with HC(77)16 (WHC(77)38 in Wales)[29] a red indicating lamp should be provided on each Controlled Drugs cupboard, with remote indicating lamps where appropriate at the doorway to the room in which the cupboard is located, the corresponding staff base, and after hours (day patient accommodation) in a continuously manned area external to the accommodation. The lamps should be interlocked with the cupboard to give visual indication when the cupboard is unlocked and should be supplied from an essential circuit. For further information see MDB Booklet 5/1[30] and its associated specification for electrical services.

Socket-outlets

3.53 Sufficient 13-amp universal type switched, shuttered socket-outlets, connected to ring or spur circuits should be provided to allow all portable appliances likely to be used simultaneously to be individually supplied. Activity Data sheets indicate specific locations for the outlets associated with individual activities; the installation of twin outlets should be considered where these activities occur in juxtaposition.

3.54 Domestic cleaning appliances with flexible leads nine metres long should be assumed and socket-outlets, usually in corridors, should be provided to enable such machines to operate over the whole area of the space concerned.

3.55 Permanently connected appliances rated up to 13 amps should be supplied from double pole switched spur boxes and fused as required. Appliances rated in excess of this load, or those requiring a three-phase supply, should be permanently connected to separate final circuits from fuse-boards and independently switched.

3.56 Switches or other means of isolation should be provided adjacent to electrical machinery and plant to ensure the safety of operators and maintenance staff.

3.57 Heating appliances and automatically operated equipment should be provided with indicator lights to show when the equipment is energised. Such indicators should be incorporated in the control panel of the apparatus, in the control switch, or in the outlet from which the apparatus derives its supply.

X-ray equipment

3.58 Facilities for the use of mobile X-ray equipment are required in the in-patient nursing section. The heavy current surge associated with direct mains operated mobile X-ray apparatus requires special provision to be made to avoid excessive voltage drop and consequential unsatisfactory operation. A special 13-amp plug is commercially available which has been designed to accommodate the larger sizes of flexible cables used with this equipment. The impedance of the supply to the socket-outlets should be in accordance with HTM 7,[20] paragraphs 185–191.

Emergency electrical supplies

3.59 Guidance concerning the provision of emergency electricity supplies is given in HTM 11,[31] and the grade of standby lighting provision is shown on the Activity Data 'A' sheets. Safety lighting in accordance with HTM 11[31] and BS 5266[32] should be provided on primary escape routes.

3.60 Socket-outlets should be so distributed that, in each area where essential equipment may be used, socket-outlets connected to at least two separate fused circuits of common polarity are available. All socket-outlets in the in-patient and day patient accommodation and all communication, clock and alarm systems throughout the department should be connected to the essential electricity supply system.

Nurse call systems

3.61 In the in-patient and day patient accommodation patient/nurse call points should be located at each bed position (3.51), in dining/play day spaces and in all patient sanitary areas. They should comprise a push-button, reassurance lamp and re-set switch. The call points in these areas should also include a nurse/nurse call facility and a nurse/nurse call point should also be provided in all treatment rooms. A visual and audible indication of operation should be provided at the staff base to give responding staff unambiguous identification of the call type and source. Further guidance is given in HTM 15.[33] Hospital policy may also require a nurse/nurse emergency alarm to be repeated in an adjacent department or transferred to a centrally-manned point.

3.62 In the out-patient accommodation patient/staff call points with a staff/staff call facility will be required in all patient toilets and a staff/staff call point will be required in the treatment room and all consulting/examination rooms. An indication of operation should be provided at the staff base similar to that in the in-patient accommodation.

3.63 In the comprehensive assessment accommodation a staff/staff call facility with indication at the reception desk will be required in each assessment room and in the assisted toilet.

Next-patient call system (Out-patients)

3.64 Some clinicians may prefer to call their patients personally but generally a simple and unobtrusive visual call system will be required. This should comprise an illuminated indicator panel and warning buzzer of subdued tone located at the reception desk.

Staff location system

3.65 The staff location system employed in the hospital should be extended to give adequate cover to this department. Guidance on these systems is given in HTM 20.[34]

Wireways for telephones

3.66 Central telephone facilities for internal and external calls, either in separate or combined form, will normally be available and should be extended to serve

this accommodation in accordance with the requirements shown on Activity Data sheets. Telephones will normally be of the desk pattern. In bed areas, or adjacent to them, they should be fitted with an indicating call-light and a bell or buzzer of subdued tone which can be switched out of use.

3.67 British Telecommunications (BT) standard telephone jack outlets for use with a coin-operated telephone trolley should be provided in single and multi-bedrooms and also where ambulant patients may use a telephone with reasonable privacy. An outlet should also be provided at the normal parking location of this mobile unit. To minimise revenue costs all outlets should be common to one out-going BT exchange line.

Electric clocks

3.68 Clocks should operate in conjunction with a master clock system. If such a system is not available synchronous clocks should be installed using a common clock circuit suitable for future connection to a master system. The number of clocks provided should be kept to the minimum and they should be installed only where they can be viewed by a significant number of staff/patients/visitors.

Fire alarm and detecting system

3.69 A monitored open-circuit system which allows the connection of break-glass call points and automatic detectors (if required) is recommended. The choice of detectors is a complex matter and is dealt with in the guidance already mentioned in paragraph 3.12. With the exception of the treatment rooms (visual alarm) audible signals will normally be adequate but it should be noted that sound levels require checking for audibility after full occupancy of the building and after any automatic door detentes have been released. (HTM 82[7] App. 5)

Radio and television

3.70 Radio relay and television signal reception should be available from the hospital communal aerial system and central amplification equipment. Radio reception facilities should be provided in each bed-head unit and a TV aerial co-axial outlet installed in the dining/play areas, parents' sitting room, education room and in each of the single and six-bed rooms. Additionally, in each of the six-bed rooms, a sound channel in each bed-head unit should be connected to an audio input socket installed adjacent to the TV aerial outlet. This will allow the integral loudspeaker of the TV receiver to be disconnected and the audio output distributed to the bed-head units via an approved matching interface device. All TV receivers should be located at a level beyond the reach of children.

Lightning protection

3.71 Protection against lightning should be provided in accordance with HTM[20] and HSE Data Sheet DB 2.[35]

Internal drainage

3.72 The primary objective is to provide an internal drainage system that uses the minimum of pipework and remains water and air-tight at joints and connections, but is sufficiently ventilated to retain the integrity of water seals.

3.73 General design guidance is given in the relevant British Standards and Codes and Practice including BS 5572 — formerly CP 304[36], and the current Building Regulations. Recommendations regarding spatial and access requirements for public health engineering services are given in HSE Data Sheet EA5.[37]

3.74 The gradient of branch drains should be uniform and adequate to convey the maximum discharge to the stack without blockage. Practical considerations such as available angles of bends/junctions and their assembly, as well as space considerations, usually limit the minimum gradient to about 1:50 (20mm/m). For the larger pipes, eg 100mm diameter, flatter gradients can be used but require workmanship of a high standard if adequate self-cleansing flow is to be maintained. It is not envisaged that pipes larger than 100mm diameter will be required within inter-floor or ground floor systems serving this accommodation.

3.75 Bedpan macerators should discharge with a short branch to a vertical stack or horizontal drain. The waste should not be installed above or close to heating or hot-water mains. If the macerator discharges to a 100 mm drain then frequently-used large volume appliances should be situated upstream of its connection to provide additional flushing to help prevent resinuous sludge accumulating in the drain.

3.76 The materials specified for the drainage system in this accommodation will depend upon their location and the nature of the effluent being discharged. Although adequate for the drainage requirements UPVC may not always be acceptable to the fire officers and neither should it be installed above 'sensitive' areas, eg operating, intensive therapy, radio-diagnostic or catering departments etc.

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4 Cost information

4.1 For all types of health buildings it is clearly of vital importance that building and running costs should be kept as low as possible consistent with acceptable standards. Within this general context building notes provide a synopsis of accommodation for health buildings which the Department, in conjunction with the National Health Service, recommends for the provision of a given service.

4.2 In planning the operational policies for a project the aim should be to achieve the optimum use of space by as much sharing as is possible without detriment to the needs of patients and staff and to the proper functioning of the spaces involved. Sharing may require some enlargement of a space and the provision of additional equipment. The principles by which maximum use of activity spaces can be achieved are given in paragraph 2.4. Depending upon the type of development they can be applied to some or all of the spaces listed in:

Paragraphs — 2.119 - 2.143 (Nursing Section).

Paragraphs — 2.55 - 2.57 (Out-patients).

Paragraphs — 2.78, 2.79 (2.55) (Comprehensive Assessment [when adjoining OPD]).

Departmental cost allowance (DCA)

4.3 To prepare the DCA for a scheme, reference should be made to the current edition of Appendix 7 to Hospital Building Procedure Note 6 — Capricode. The total DCA for any scheme is derived by aggregating the cost of the functional units together with any ECA (see below) as appropriate to the particular scheme. An example is given in the Health Notice associated with this Note.

4.4 The DCA covers the building and the engineering guidance set out in this Note. The costing of the functional units assumes that they will be incorporated into a whole hospital to form a complete department.

4.5 The functional units in this Note are:

a. 20-Bed nursing section — with shared accommodation

b. 20-Bed nursing section — built as a single section

c. Out-patients' accommodation (within main OPD)

d. Comprehensive assessment —

(i) Adjoining children's OPD

(ii) Independent of children's OPD

e. 8-Bed day patient accommodation.

Schedules of activity spaces for each functional unit are provided at the end of this chapter.

Dimensions and areas

4.6 In determining space requirements, the essential factor is not the total area provided but the critical dimensions, ie those dimensions critical to the efficient functioning of the activities which are to be carried out. There are therefore no recommended areas associated with the schedules of activity spaces. To assist project teams in preparing detailed design solutions for the rooms and spaces, the Department has carried out studies to establish dimensional requirements in the form of critical dimensions. The results of these studies appear as ergonomic diagrams in the Appendix to this Note and in the draft building note 'Common Activity Spaces', which has been made available to Regional Health Authorities as a working document.

4.7 It is recognised that, for development planning and at the earliest stage of a departmental design, it may be convenient for designers to have data available which enables them to make an approximate assessment of the sizes involved. For this reason the schedules of areas, prepared for the purpose of establishing the DCA, are included with the Health Notice promulgating the DCA for this Note. It is emphasised that the areas published DO NOT represent recommended room sizes nor specific individual entitlements.

Nursing sections

4.8 The DCA is based on a nursing section of 20 beds sharing the accommodation shown in 2.119 — 2.143. The DCA covers provision of: eight single rooms, two of which have mechanical ventilation to facilitate barrier nursing and shower and WC en suite; two six-bedded rooms; a play/dining space; a treatment room; accommodation for parents; and ancillary accommodation. When a single 20-bed nursing section is required additional space will be needed and a cost for a 20-bed nursing section built as a single section has been provided.

4.9 Staff toilets have been provided for within the nursing section DCA. Staff changing (2.134) has been left for local decision, and costs are provided separately for both centralised and decentralised staff change under ECA.

4.10 A seminar room, the nursing officer's office and an office/interview room have been left for local decision and a cost also provided under ECA.

Essential complementary accommodation (ECA)

4.11 This comprises activity spaces which are essential to the running of the department but which in certain circumstances may be available in a convenient

location elsewhere, either in a new development or an existing building. The amount of ECA which will need to be provided as part of an individual project will therefore vary according to the extent of the provision available elsewhere. The ECA costed for this Note is listed in the Schedule at the end of this chapter.

Education

4.12 To enable health authorities to determine the initial costs of providing educational facilities and to open negotiations with local education authorities (1.30) costs have been included in ECA. (4.11) Costs have been provided for:

a. Education room for 10 patients
   Education room for 20 patients
b. Teachers' base
c. Education store
d. Adolescent day room

Out-patients' accommodation

4.13 A DCA has been provided for a suite (which is expected to be adequate for most districts) comprising three consulting/examination rooms, with a treatment room; provision is also made for a weighing and measuring room and mother and baby room. Ancillary accommodation consisting of reception, waiting, dirty utility, office, pram store and sanitary accommodation is included. The requirement for any additional consulting/examination rooms must be based on the anticipated number of doctor sessions. (2.41–2.42)

Comprehensive assessment and care accommodation

4.14 A DCA has been provided to cover the accommodation required when associated with the children's out-patients' accommodation and when independent of it.

4.15 The accommodation provides for two assessment/observation remedial therapy treatment rooms with an associated viewing room, two offices, a seminar room, stores, waiting and dining facilities with necessary sanitary accommodation.

4.16 When in independent form, a reception, two consulting/examination rooms, a dirty utility, staff facilities, pram store and switchroom are added. Central staff changing has been assumed and costs for a staff locker room provided.

Day patient accommodation

4.17 The DCA provides for a space with two single rooms, a six-bedded room together with staff base, treatment/examination, pantry, utilities, waiting/play area and sanitary accommodation.

Engineering

4.18 The DCA allows for the provision of space for a heating and ventilating zone adjacent to external walls and for small vertical ducts. This space is included together with the planning provision as part of the circulation shown in the schedules of areas for costing.

Communications — plant space

4.19 Plant rooms, with the exception of an electrical switch room and a standard enclosure for medical gas isolation points, are not included in the DCA.

Engineering services

4.20 The following engineering services as described in the Engineering Chapter and exemplified in Activity Data are included in the DCA. Primary engineering services are assumed to be conveniently available at the boundary of the department.

a. **Mechanical services**

Heating: low pressure hot water system with zone control using convectors or enclosed radiators with maximum surface temperature of 43°C.

Ventilation: mainly natural but with a mechanical supply and extract to meet clinical and functional requirements.

Cold water service: centrally supplied to service points including drinking water and hose-reels. Storage tanks not included.

Hot water service: centrally stored at not more than 60°C (storage excluded) and distributed at 52°C ± 2°C with temperature reduction facilities (43°C max) for patient baths and showers.

Medical gas: piped supply of oxygen, medical compressed air and vacuum from hospital centralised system.

b. **Electrical services**

Departmental distribution switchboard.
General lighting as required by tasks.
Fluorescent, tungsten and emergency lighting fittings as appropriate.
Socket-outlets and other power outlets for fixed and portable equipment.
Standby lighting and power requirements.
Safety lighting for escape routes.
Nurse call, radio and TV installation.
Outlets-for telephone trolley but conduits only for other telephones.
Staff location extension to hospital system.
Impulse clocks.
Fire, medical gas and drug cupboard alarm systems.
Local intercommunication system (assessment/observation room).

c. **Equipment (Group 1)**

Bed-pan disposal units
Thermostatic mixing valves
Water boilers

Essential complementary accommodation

	Activity Space	*No*
	Education	
1.	Education space — 10 places	1
2.	Education space — 20 places	1
3.	Teachers' base	1
4.	Education store	1
5.	Adolescents' day room	1
	Nursing section	
6.	Parents' bedroom	1
7.	Seminar room	1
8.	Office/interview	1
9.	Nursing officer's office	1
10.	Staff locker room (central changing)	1
11.	Staff changing (local changing)	1

SCHEDULE OF ACTIVITY SPACES
Out-patients and comprehensive assessment

No.	Activity Space	Out-patients in main OPD	Comprehensive Assessment	
			A. Next OPD	B. Independent
		No.	No.	No.
1.	Reception	1	–	1
2.	Waiting	1	–	–
2A.	Waiting-Dining	–	1	1
3.	Mother and Baby Room	1	–	–
4.	Weighing and Measuring	1	–	–
5.	Consulting-Examination	3	–	2
6.	Assessment-Observation	–	2	2
7.	Viewing Room	–	1	1
8.	Treatment	1	–	–
9.	Office	1	2	2
10.	Office-Seminar	–	1	1
11.	WC with hand-wash	1	1	2
12.	Assisted WC and toiletting	1	1	1
13.	Specimen Collecting WC	1	–	–
14.	Dirty Utility	1	–	1
15.	Wheelchair/pram bay	1	–	1
16.	Store — Toys	–	1	1
17.	Store — General	–	1	1
18.	Staff WC	–	–	1
19.	Switchroom	1	1	1

20-bed nursing section and day care accommodation

No.	Activity Space	20 bed nursing section		Day patient accommodation
		Sharing	Single	
		No.	No.	No.
1.	Single Room	6	6	2
2.	Single Room — Shower WC En suite	2	2	–
3.	Multi-Bed Space — 6 Beds	2	2	1
4.	WC with Hand Rinse	2	2	2
5.	Assisted WC	1	1	–
6.	Bath — WC	2	2	–
7.	Assisted Bath — WC	1	1	–
8.	Assisted Shower — WC	1	1	–
9.	Play-Dining	1	1	–
9A.	Waiting-Play	–	–	1
10.	Clean Utility	1	1	–
11.	Dirty Utility	1	1	1
12.	Linen Store	1	1	–
13.	Clothing/General store	1	1	–
14.	Staff Base	1	1	–
14A.	Staff Base-Clean Utility	–	–	1
15.	Nursing Section Office	1	1	–
16.	Pantry	1	–	1
16A.	Pantry — Baby Feed	–	1	–
17.	Trolley/Wheelchair/Pram Bay	1	1	–
18.	Flower Bay	1	1	–
19.	Admissions/Examination	½	–	–
19A.	Admissions — Doctors' Office	–	1	–
20.	Treatment	½	1	–
20A.	Treatment — Examination	–	–	1
21.	Parents' Sitting Room	½	1	–
22.	Parents' Shower — WC	½	1	–
23.	Doctors' Office	½	–	–
24.	Staff WC	1	1	–
25.	Baby Feed Store/Preparation Room	½	–	–
26.	Equipment Store	½	1	–
27.	Cleaners' Room	½	1	–
28.	Disposal Room	½	1	–
29.	Resuscitation Trolley Bay	½	1	–
30.	Switchroom	1	1	1

5 Activity Data

5.1 The expression 'Activity Data' refers to an information system developed to help project and design teams by defining the users' needs more precisely. This information constitutes the Activity Data Base, which was issued to Regional Health Authorities in England and to the Health Departments in Scotland, Northern Ireland and Wales in 1976. It comprises two types of information sheet: Activity Space Data Sheets (known as 'A' sheets) and their supporting Activity Unit Data Sheets (known as 'B' sheets).

5.2 'A' sheets record in more detail than is described in this Note each task or activity that is performed in a particular activity space (which may be a room, space or bay) together with details of the environmental conditions and the technical data necessary to enable the activities to be performed. Each 'A' sheet also contains a list of the titles and code numbers of the relevant 'B' sheets which give, both in narrative text and in graphics to scale, equipment fitted or supplied as part of the building and engineering terminals which safety the required user activities.

5.3 Further information about the use and preparation of Activity Data can be found in the "Guide to 'A' and 'B' Activity Data Sheets and their use in Health Building Schemes" which was issued to Regional Health Authorities in June 1980 and to NHS Authorities in Wales in November 1980. Copies of the Guide are available from the Department's Directorate of Works Development, Branch Dev 1.1, Euston Tower, 286 Euston Road, London NW1 3DN.

Activity data applicable to this Note

5.4 The 'A' and 'B' sheets recommended for the activity spaces described in this Note have been newly prepared or selected from existing sheets. Their code numbers, and titles are provided on the lists which follow.

5.5 Further Activity Data sheets may be selected, or drawn up by project teams to their own requirements, for any services not described in the Note or included in the list. Members of project teams are advised to contact their Regional Activity Data Co-ordinator/Welsh Office for information and advice about the selection of activity data at an early planning stage. However, in order to ensure consistent and economic provision, variations from the 'A' sheets recommended for the spaces covered in this Note should be considered only where it has been decided that the function of a space will differ substantially from that described.

List of Activity Data 'A' sheets

Activity Space		A Sheet code No	Para No in building note
Out-patient Accommodation			
1. Reception		J0210	2.44
2. Waiting		J1406	2.44
3. Mother and baby room		J0702	2.47
4. Weighing and measuring room		C1405	2.48
5. Consulting/examination room		C0201	2.49
6. Treatment room		X0105	2.50
7. Office (Nursing sister/charge nurse)	C	M0201	2.51
8. Dirty utility (without BPDU)		Y0401	2.52
9. WC and hand-rinse		V1106	2.53
10. Assisted WC and hand-rinse	C	V1204	2.53
11. Specimen collecting WC		V1403	2.53
12. Pram store/wheelchair bay		G0108	2.54
Comprehensive assessment and care accommodation			
A. *Additional spaces required when associated with children's OPD* (2.69)			
1. Assessment/observation/ remedial therapy treatment room		X0704	2.69
2. Viewing room		X0705	2.71
3. Office	C	M0201	2.72
4. Office/seminar	C	H0503	2.72
5. Storage		W1110	2.73
6. Waiting/dining space/ beverages		J1405/ P0702	2.74
7. WC and hand-rinse		V1106	2.76
8. Assisted WC and toiletting		V1216	2.77
B. *Total spaces required when not associated with children's OPD* (2.80)			
1. Reception		J0210	2.44
2. Waiting/dining spaces/ beverages		J1405/ P0702	2.74
3. Consulting/examination room	C	C0201	2.49
4. Assessment/observation/ remedial therapy treatment room		X0704	2.69
5. Viewing room		X0705	2.71
6. Office	C	M0201	2.72
7. Office/seminar	C	H0503	2.72
8. Ambulant WC		V1106	2.76
9. Assisted WC and toiletting		V1216	2.77
10. Dirty utility (without BPDU)		Y0401	2.52
11. Staff locker room		V0606	2.134
12. Staff WC	C	V1005	2.134
13. Storage		W1110	2.73
14. Pram store/wheelchair bay		G0108	2.54
15. Switchroom		K0101	2.143
In-patient accommodation			
1. Single room		B1801	2.95
2. Single room (shower/WC en suite)		B1802	2.97

C = Common Activity Spaces

List of Activity Data 'A' sheets *(cont.)*

Activity Space		A Sheet code No	Para No in building note
In-patients accommodation *(cont.)*			
3. Multi-bed - 6 beds (4 suction/gas outlets)		B2002	2.98
4. Multi-bed - 6 beds (6 suction/gas outlets)		B2004	2.98
5. WC with hand-rinse		V1106	2.104
6. Assisted WC and handrinse	C	V1204	"
7. Ambulant bathroom and WC		V1711	"
8. Assisted bathroom and WC		V1716	"
9. Assisted shower and WC		V1305	"
10. Play/dining/education etc		D0803/ D1119	2.106
11. Clean utility	C	T0601	2.109
12. Dirty utility (with BPDU)	C	Y0301	2.110
13. Linen store		W1421	2.111
14. Clothing and general store		W1421	2.112
15. Staff base		T0108	2.114
16. Nursing section office	C	M0201	2.115
17. Pantry		P0607	2.116
18. Trolley/wheelchair/pram bay		G0108	2.117
19. Flower bay		Y1402	2.118
Shared accommodation			
20. Admission/examination room		C0301	2.120
21. Treatment room		X0214	2.121
22. Education space	See DES Design Note	D0803/ H0704	2.122
23. Adolescents' day room	See DES Design Note	D1119/ M0101	2.123
24. Teachers' base	See DES Design Note	D1122/ W0905	2.125
25. Parents' bedroom		D1303	2.126
26. Parents' sitting room		J1307	2.127
27. Parents' shower and WC		V1305	2.128
28. Doctors' office	C	M0305	2.129
29. Seminar room	C	H0503	2.130
30. Office/interview	C	M0201	2.132
31. Nursing officer's office		M0205	2.133
32. Staff locker room (staff use centralised changing)		V0606	2.134
33. Staff changing room (decentralised changing)		V0504	2.135
34. Staff WC	C	V1005	2.137
35. Baby feed store/preparation room		P1002	2.138
36. Equipment store		W1420	2.139
37. Cleaners' room	C	Y1501	2.140
38. Disposal room	C	Y0603	2.141
39. Resuscitation trolley bay		G0103	2.142
40. Switchroom		K0101	2.143
Day patient accommodation			
1. Staff base/reception/clean utility		T0305	2.154
2. Waiting/play		J1406	2.155
3. Single bedroom		B1801	2.156
4. Multi-bed room		B2002	2.157
5. Treatment/examination room		C0613	2.158
6. WC and hand-wash		V1106	2.159
7. Pantry		P0601	2.160
8. Dirty utility/disposal room (with BPDU)	C	Y0301	2.161
9. Switchroom		K0101	2.162

C = Common Activity Spaces

List fo Activity Data 'B' sheets

'B' Sheet code No		*Activity Unit Title*
A02AH	Cleansing	- Clinical handwashing
A05BJ	Preparation/Storage	- Controlled Drugs and medicines 3 cupboards
A19AI	Supervision Control	- Staff base nursing section
A22AL	Examination	- Clinical examination area with couch
A24BJ	Treatment	- Clinical area with couch
A24BY	"	- Clinical area with couch and piped oxygen, suction and medical compressed air
A26AJ	"	- Intermediate care baby or child
A26BL	"	- Oxygen, suction and medical compressed air
A27AB	Assessment	- Viewer X-ray film double, wall-mounted
A29AL	Holding/Testing	- Urine test
A32AB	Clinical Measurement	- Patient height
A32AC	" "	- Patient, beam scale
A32AK	" "	- Baby scales
A32AL	" "	- Harpenden infant measuring table
B02BI	Cleansing	- Sink unit, cupboard
B02BM	"	- Sink unit, with 2 shelf tier 900 x 300 mm
B02CI	"	- Worktop and sink unit
B04BX	Storage Cupboard	- Cupboard 1000 x 900 x 450 mm steel small
B04BY	" "	- Cupboard 1800 x 900 x 450 mm steel lockable
B04GA	" "	- Cupboard, 600 x 1200 x 300 mm wall-mounted, 1 shelf, lockable melamine F & L
B04IB	" "	- Bin, mobile, plastic
B04IC	" "	- Cupboard display unit, mobile
B04KO	" "	- Clean and sterile supplies 6 basket trolley, 2 trolleys and 2 shelves over
B04LG	" "	- Cupboard, 1800 x 900 x 500 mm, steel, vertical dividers
B05BE	Preparation/Storage	- Worktop 1800 x 600 mm heavy duty drawer unit and cupboard under
B05CF	"	- Cupboard 800 x 1200 x 500 mm lockable, with worktop
B06BE	Preparation	- Beverages, ward, occasional
B06BO	"	- Beverages and snacks 12 bed unit
B06BX	"	- Beverages and snacks visitors' suite
B06CB	"	- Baby milk feeds
B06CI	"	- Beverages, incidental
B06CN	"	- Beverages, paper cup dispenser
B08AO	Holding/Disposal	- Dirty utility
B09AC	Disposal	- Liquid waste
B09BD	"	- Bedpan unit, general acute ward
B14AQ	Administration	- Desk single pedestal with chair and socket outlet
B14AY	"	- Single pedestal, desk with chair telephone and socket outlet
B24AS	Education	- Glassboard wall-mounted 1000 x 1200 mm

List of Activity Data 'B' sheets *(cont.)*

'B' Sheet code No		*Activity Unit Title*
B24CC	Education	- Carrell, freestanding, with strip light and socket outlet
B25AF	Recreation (Therapy)	- Television pedestal model
B25AG	"	- Child's painting easel
B25AX	"	- Sand tray and sink
B26AA	Rest	- Overnight stay
B27AS	Toilet	- Personal washing and clinical hand-washing
B27AX	"	- WC, patient
B27BC	"	- Hand-rinse basin, single
B27CF	"	- Bathing, child
B27DW	"	- Shower, patient, categories 1-3
B27EB	"	- Hand-rinse basin, single work area
B27EH	"	- Personal washing, child range 2
B27EL	"	- WC Wheelchair, specimen collection and hand-rinse basin
B27EW	"	- WC wheelchair and personal washing
B27FG	"	- Bathing assisted, with hair washing, child
B31AE	Parking	- Chair weighing machine
B31DX	"	- Hoist, patient, chair type mobile
B41AD	Preparation/Holding	- Flowers
C01CB	Clothes storage	- Lockers, twin 1800 x 600 x 530 mm
C03CB	Storage	- Hook, hat and coat, two
C03CC	"	- Hook, hat and coat, three
C03CD	"	- Hook, hat and coat, four
C03CF	"	- Hook, hat and coat, six
C03DA	"	- Hook, hat and coat, wide spacing, two
C03EA	"	- Hook equipment, wall-mounted
C03FD	"	- Clip, equipment, six
C04CA	Chairs	- Upright, stacking
C04CG	"	- Easy, with open arms, low back
C04CH	"	- Easy, open, high back
C04CI	"	- Easy, unit
C04DB	"	- Child upright, seat height 390 mm
C04DC	"	- Child upright, seat height 430 mm
C04GD	"	- Wheelchair
C04GF	"	- Sanitary chair
C04HC	"	- Nursing
C09CA	Tables	- 650 x 1200 x 600 mm
C09CG	"	- 710 x 1200 x 900 mm
C09FA	"	- Occasional, square, 400 x 600 x 600 mm
C09FC	"	- Occasional, 530 x 840 x 455 mm with shelf
C09GA	"	- Child, 470 x 1200 x 700 mm
C09GD	"	- Child, semi-octagonal, 650 x 1200 mm diameter
C12CA	Disposal Containers	- Holder, sack, small, free standing
C12CB	" "	- Holder, sack, medium, free standing
C12DB	" "	- Holder, sack, medium foot operated, free standing
C12FC	" "	- Sack holder, mobile, foot operated, large
C12GB	" "	- Bin, with liner, mobile

List of Activity Data 'B' sheets *(cont.)*

'B' Sheet code No	*Activity Unit Title*
C13CA Book Storage	- Book case, open standing 2 shelves, 900 x 1200 x 300 mm
C13CB " "	- Bookcase, standing, 1200 mm long, wood door, 3 shelf
C13CE " "	- Bookcase, standing, 1200 mm long, wood doors, 4 shelf
C13DA " "	- Bookshelves, island, double, 4 shelves, 1800 x 1800 x 450 mm
C13DB " "	- Bookshelf, wall mounted, 600 x 200 mm
C17CA Mirrors	- Wall mounted, 1500 x 400 mm
C18CA Display Panel	- Panel, display, wall mounted, 800 x 600 mm
C18CB " "	- Panel, display, wall mounted, 800 x 1200 mm
C18DA " "	- Wall mounted, low level, 800 x 600 mm
C18DB " "	- Wall mounted, low level, 800 x 1200 mm
C19DA Chalkboards	- Wall mounted, 800 x 600 mm
C19DB "	- Wall mounted, 800 x 1200 mm
C20CD Marker Board	- Wall mounted, 1200 x 600 mm
C23CA Document Storage	- Cabinet, filing, 2 drawer
C23CB " "	- Cabinet, filing, 4 drawer
C23CC " "	- Cabinet, stationery, metal, 15 drawer with locks
C27CD Stools	- Stool, kick, retractable castors
C31CB Trolleys	- General purpose, 2 tier, buffered, 965 x 915 x 455 mm
C31CD "	- Trolley, flowers
C31CH "	- Trolley, dressing/instrument, SS 750 x 450 mm buffered
C31CI "	- Trolley, dressing/instrument, SS 450 x 450 mm buffered
C31CL "	- Trolley, supermarket type
C31FF "	- Trolley, library
C31GC "	- Trolley, clean linen distribution
C31IK "	- Baby change, with brakes
C33CA Shelving	- Square ends, 600 x 200 mm
C33CB "	- Square ends, 600 x 300 mm
C33CD "	- Square ends, 600 x 500 mm
C33DB "	- Square ends, 900 x 300 mm
C33DC "	- Square ends, 900 x 400 mm
C33EB "	- Square ends, 1200 x 300 mm
C33EC "	- Square ends, 1200 x 400 mm
C33ED "	- Square ends, 1200 x 500 mm
C33FB "	- Square ends, 1500 x 300 mm
C33FD "	- Square ends, 1500 x 500 mm
C33FN "	- Both ends splayed and rounded, 1500 x 300 mm

List of Activity Data 'B' sheets *(cont.)*

'B' Sheet code No	*Activity Unit Title*
C33GD Shelving	- Square ends, 1800 x 500 mm
C33HB "	- Square ends, 2100 x 300 mm
C33HC "	- Square ends, 2100 x 400 mm
C38CC Refrigerated storage	- Refrigerator, 3.6 cu ft
C38CD " "	- Refrigerator, 5 cu ft
C42EB Beds/Cots/Couches	- Examination/treatment, 675 mm high cover dispenser
C42FC "	- Settee/bed, convertible, with arms

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*In preparation

Appendix

Critical dimensions

Introduction

1. Critical dimensions are those dimensions which are critical to the efficient functioning of an activity; thus the size of components, their position and the space around them may all be critical to the task being performed. Guidance on these dimensions for a particular activity is provided in the form of ***component — user data sheets.*** These illustrate components ie equipment, furniture and fittings, and provide ergonomic data on the space required for users to move, operate or otherwise use the component; information about the component, eg fixing heights, and the users, eg reach, is also provided. Component-user data sheets thus complement the information given on Activity Data 'B' sheets (see Chapter 4).

2. This appendix contains sheets relevant to this Note. In addition, ergonomic data common to the design of a number of departments is contained in the Common Activity Spaces Health Building Note*, to which reference should also be made.

Component dimensions

3. These relate to the size and position of components as follows:

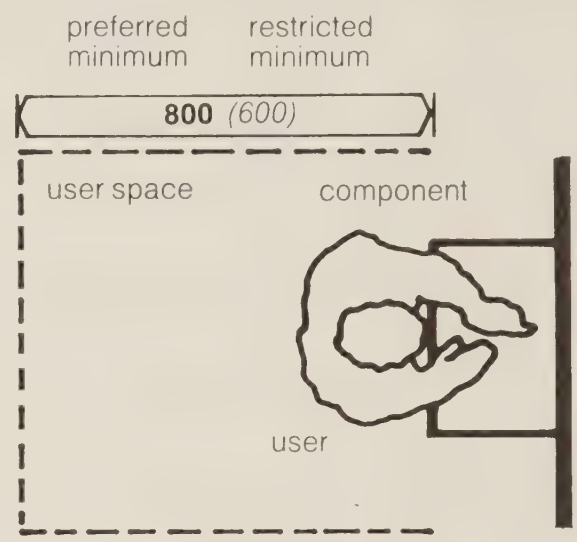
a. Sizes of components are shown thus

b. Preferred component fixing heights are shown as heights above floor level thus

(In some cases an acceptable range of fixing heights is also given italics.)

Activity dimensions

4. Activity dimensions define the user space, which is the minimum space required to perform an activity. Two types of activity dimension are given:

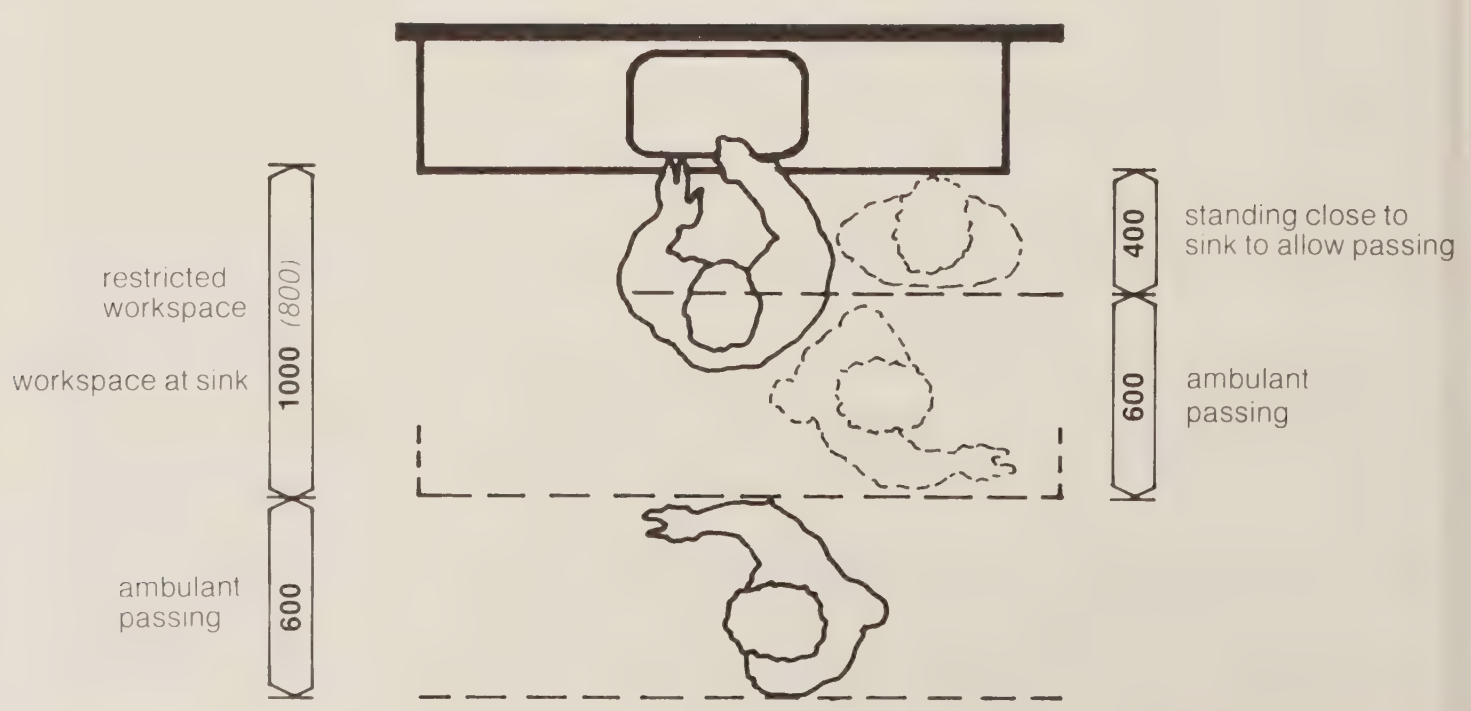


a. Preferred Minimum — This defines the minimum space required to carry out an activity efficiently and is shown in bold type.

b. Restricted Minimum - This will allow the activity to be performed only at the expense of the user experiencing some difficulty. It is not recommended for general application but may be appropriate when considering the overlapping that can be allowed when two user spaces are adjoining.

Selection of activity dimensions

5. When using component-user data sheets to design activity space layouts, selection of the appropriate activity dimensions is essential for economy and efficiency. Selection should be based on careful consideration of the frequency, duration, timing and importance of the activities and also the number of people involved. A typical example of the use of a sink showing activity dimensions provided by the component-user data sheet is shown below.

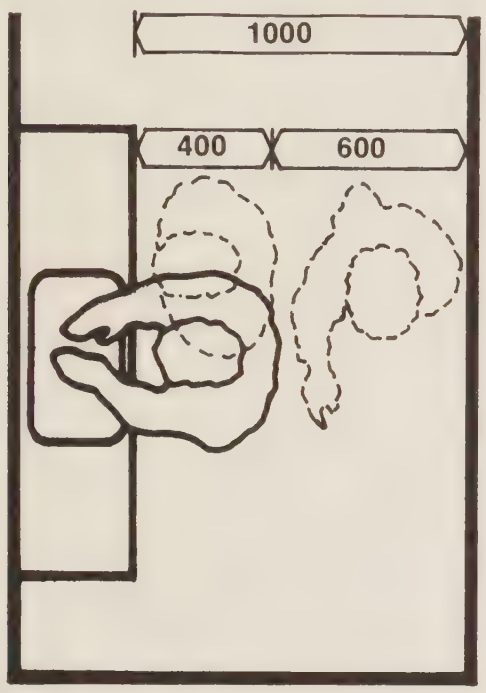


*In preparation

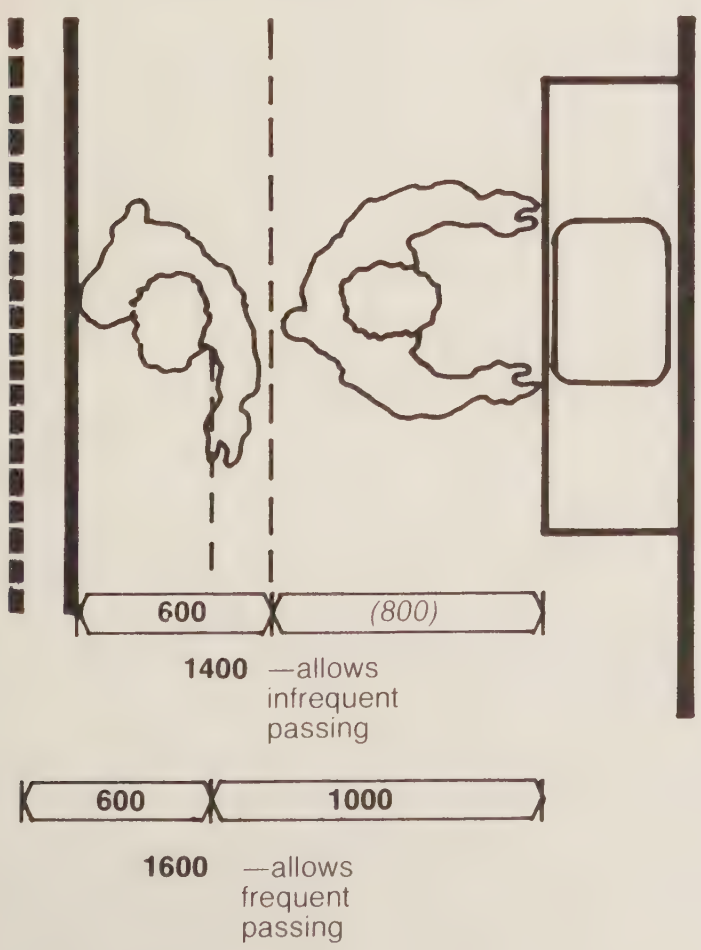
Examples

6. The following worked examples show the sink being used in three different situations and show how the appropriate dimensions would be selected. These examples have been simplified and additional factors such as the movement of mobile equipment may also be critical.

a. If the room is normally occupied by one person only the 1000 workspace dimension may be applicable. An (800) restricted dimension should not be used as this dimension is applicable only where two user spaces are adjoining, not where an individual user space is bounded by a wall or solid obstruction. If the person using the sink stops work and stands close to the sink, 1000 is also sufficient space to allow a second person to pass ie 600 + 400.

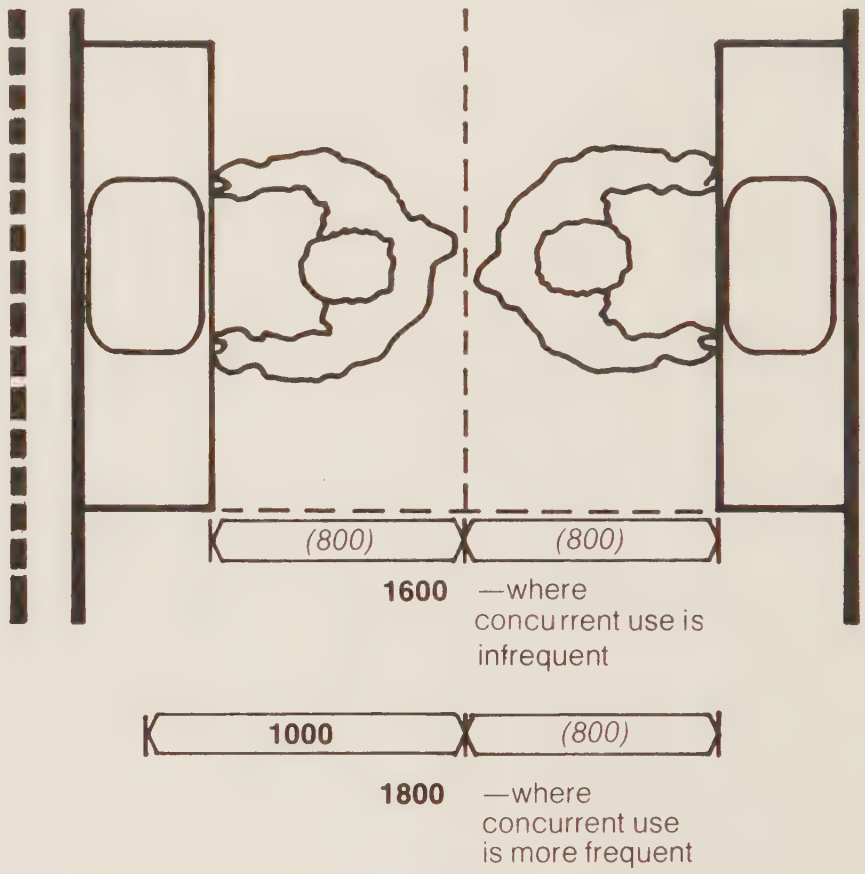


b. If space is required to allow a person to pass, without the user of the sink stopping work, then the 600 passing dimension is added to the workspace dimension. If passing is infrequent then temporary restriction of the sink user's space may be acceptable; this gives an overall dimension of 600 + (800) = 1400. If passing is frequent and restriction of the sink user's space is not acceptable the overall dimension is 600 + 1000 = 1600.



c. Where space has to be provided to enable two sinks to be used concurrently the overall dimension between sinks will be the sum of the workspace dimensions eg if concurrent use is infrequent and of short duration then (800) + (800) = 1600 may be acceptable. Alternatively 1000 + (800) = 1800 allows the full workspace for one sink user and restricted space for the second user, where concurrent use of the sinks is more frequent.

Note. The passing of a third person between the two sink users may also be critical in this example. Where the sinks are staggered 1400 may be acceptable as in example b.



List of ergonomic drawings

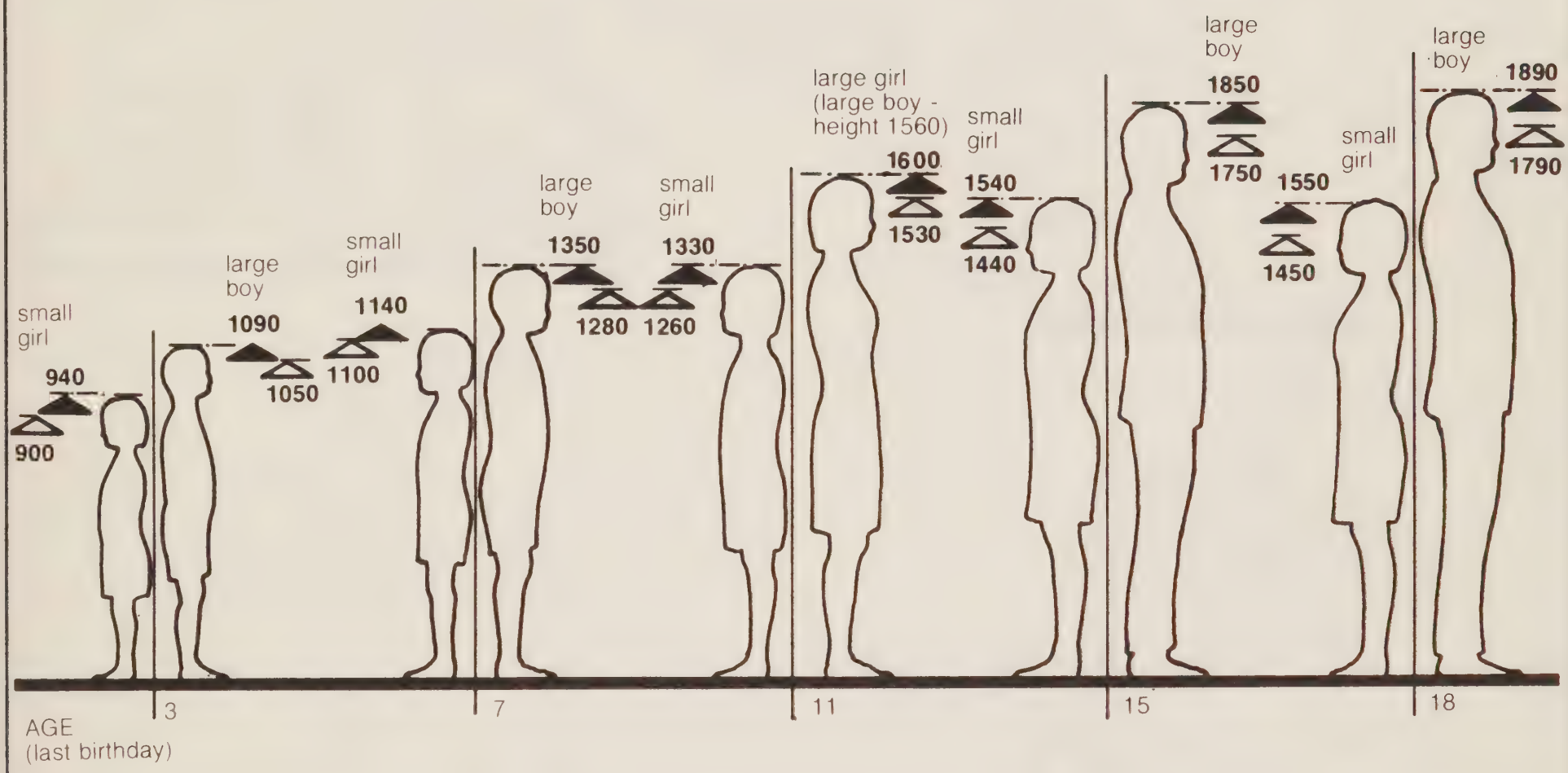
1. Child
2. Shelf
3. Chalk/Chinagraph board
4. Mirror
5. Baby bath — filling
6. Baby bath — bathing
7. Bath
8. Basin
9. W.C.
10. Chair & table
11. Pram (1)
12. Pram (2)

Activities
Stature and standing eye levels

DHSS **Ergonomic data bank:**
Component-user data sheet, not to scale

Child

Boys and girls Age 3-16 (ages last birthday)



▲ — stature

△ — eye level

Notes

1. Dimensions include a correction for shoes of 25mm.

2. Dimensions given are upper and lower limits (only 5% of children can be expected to be taller or shorter).

3. Data taken from British School of Population — dimensional survey 1971 published in Building Bulletin No.46.

Activities
Placing or removing items from shelves

DHSS **Ergonomic data bank:**
Component-user data sheet, not to scale

Shelf
Wall mounted up to 200 deep

Users
Children 3-15 (ages last birthday)

ELEVATION

UP TO 5 YEARS OLD

6-9 YEARS OLD

10-15 YEARS OLD

(also applies to adult use) steps required to safely access items on shelves infrequently accessed items only

1700 storage of large light items only

1450

1450 larger lighter items only

optimum zone for frequently accessed and small items

1200

optimum zone for frequently accessed and small items

max. shelf height for important storage

800 — up to 5 yrs. — toys
1100 — 6-9 yrs.
1350 — 10-15 yrs.

items to be kept out of reach of very young children must be stores above this

1250

1050 infrequently accessed

900

800 larger light items

large or heavy items stores

450 — up to 5 yrs.
550 — 6-9 yrs.
700 — 10-15 yrs.

small, frequently accessed items

700 bending necessary

600 bending necessary

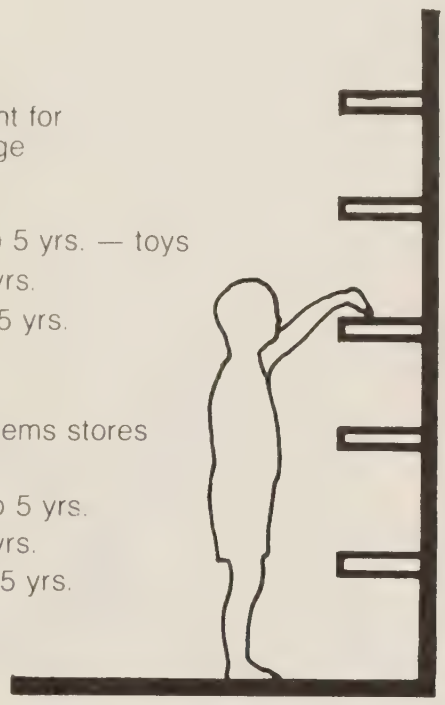
550 kneeling necessary

350 kneeling necessary

250

250

300



standing space for adult access to shelves carrying object up to 450 wide

800 *(600)*

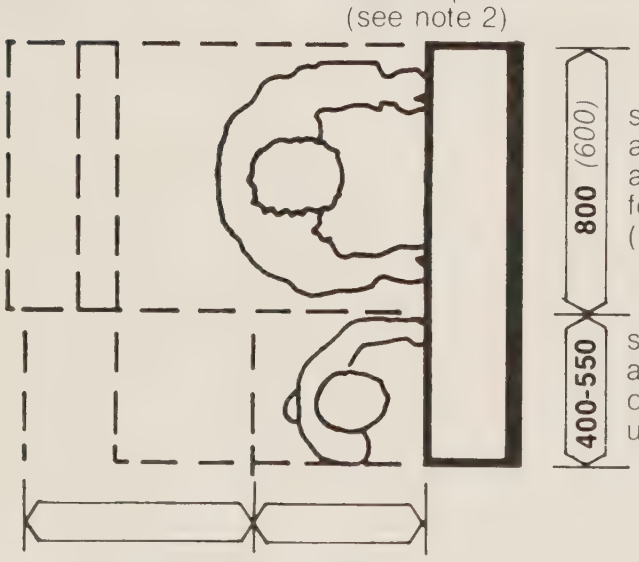
space for adult access — bending

1100

space of adult access - kneeling

900 **200**

max. depth of shelves (see note 2)



800 *(600)* space for adult access, also the minima for child access (see note 1)

400-550 space for an accompanying child (dependent upon age)

550 child - 600 adult - passing

400 child- 450 adult- standing close to allow passing

PLAN

1350 *(1300)*

Preferred minimum *Restricted minimum (not recommended for general use; see explanatory notes)*

Notes

1. Please note that space requirements for access to shelves is determined by the needs of adults (nursing staff, parents and domestic staff), and not by the children.

2. These recommendations relate to unimpeded access to shelves 200 deep (max)

3. Critical Criteria Reach — Children
— Adult access

(maximum reach, confortable reach and eye-level all being important)

Activities
Writing on a vertical surface. Standing use

DHSS **Ergonomic data bank:**
Component-user data sheet, not to scale

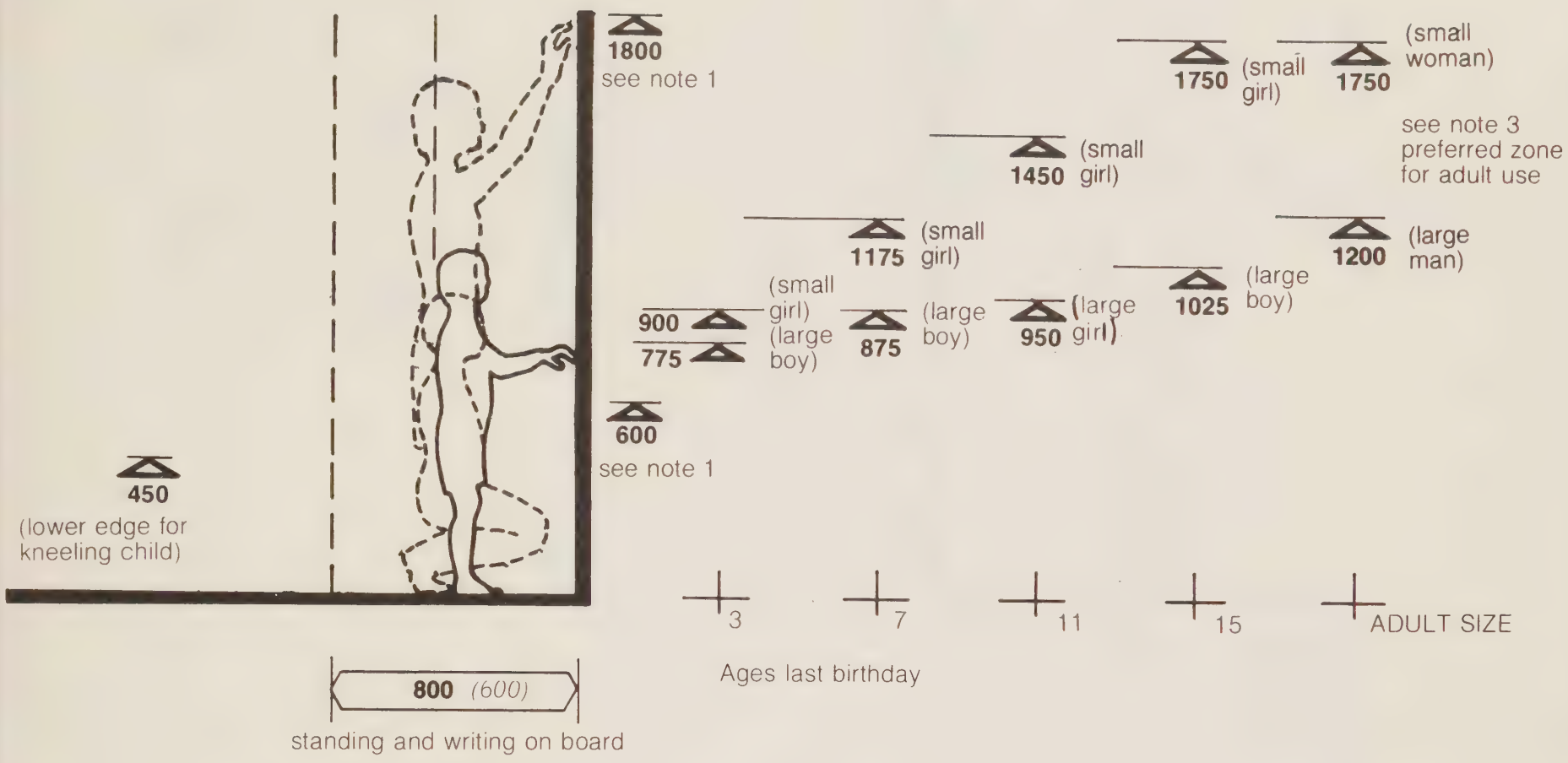
Chalk/Chinagraph board

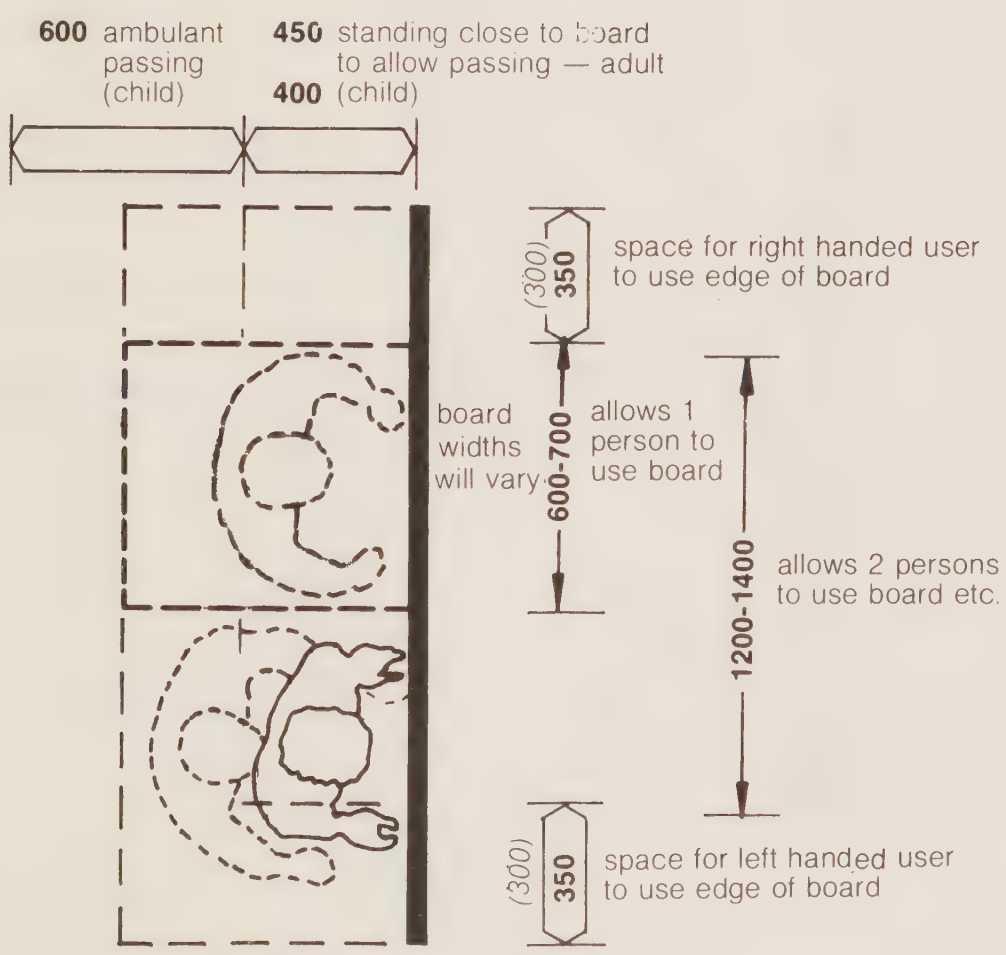
Wall mounted

Users
Children 3-5 (age last birthday)

ELEVATION

DRAWING ON A VERTICAL SURFACE — REACH LIMITS (see note 2)





PLAN

1350 *(1350)*

Preferred minimum *Restricted minimum (not recommended for general use; see explanatory notes)*

Notes

1. Recommended mounting height for 1200 high board.

2. Critical criteria — Upper edge of board — based on upper limit for girl
— Lower edge of board — based on lower limit for large boy (except 11 year olds — large girls)

3. User space must take account of possible use of space by adult eg. for teaching purposes.

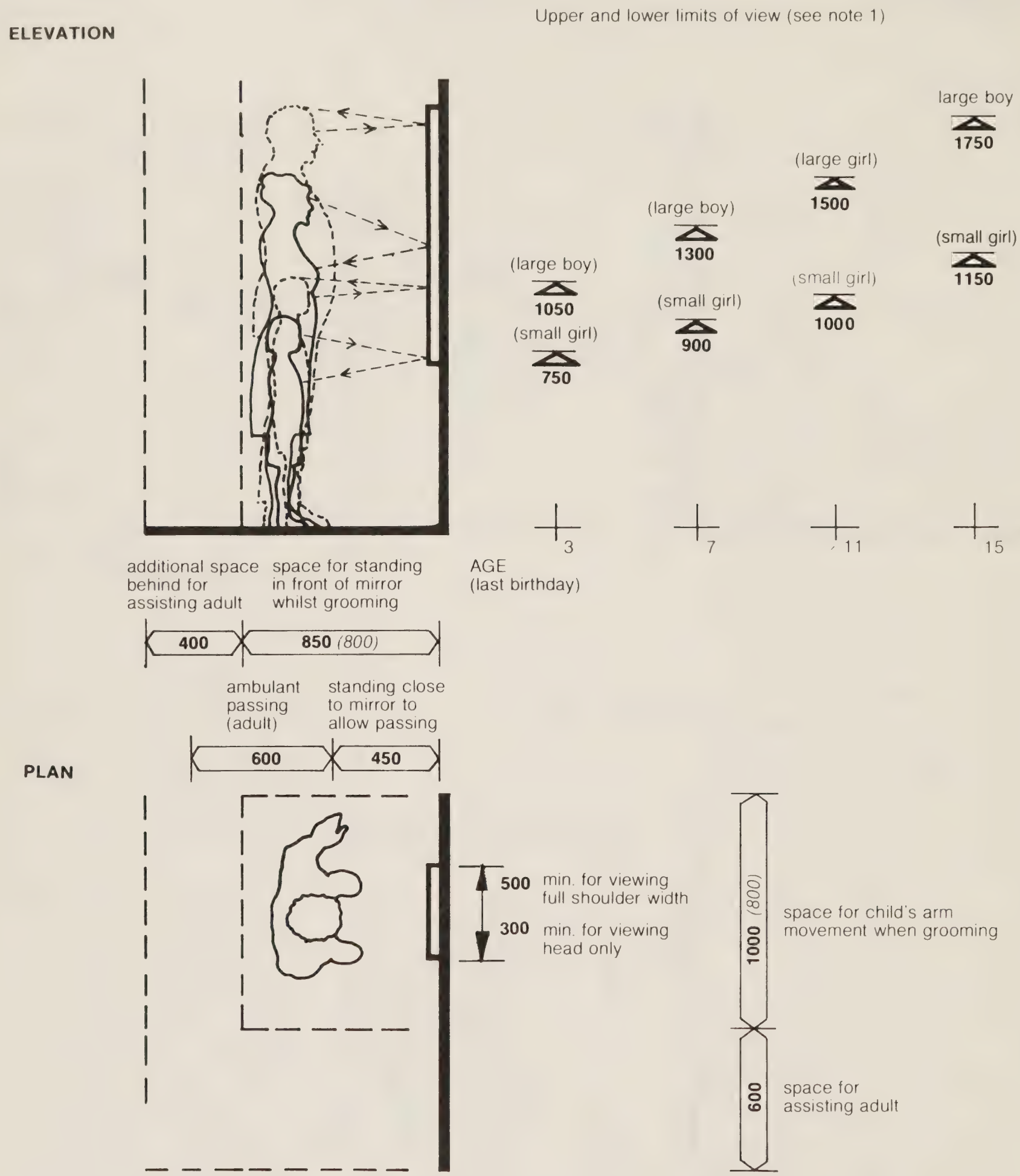
Activites
Grooming — viewing head and shoulders

DHSS **Ergonomic data bank:**
Component-user data sheet, not to scale

Mirror

Wall mounted

Users
Children 3-15 (ages last birthday)



1350 *(1300)*

Preferred minimum *Restricted minimum (not recommended for general use: see explanatory notes)*

Notes

1. The dimensions given are limits of view not heights of mirror — an allowance of 50 min. should be allowed at both the upper and lower limits of view to give the top and bottom edges of mirrors.

Example — Mirror to cater for young boys and girls from 3-15 viewing head and shoulders — dimensions above floor level.

top edge 1750 + 50 = 1800
bottom edge 750 — 50 = 700

2. Dimensions based on Building Bulletin. 38-DES — see also "Child" stature, eye levels, shoulder level.

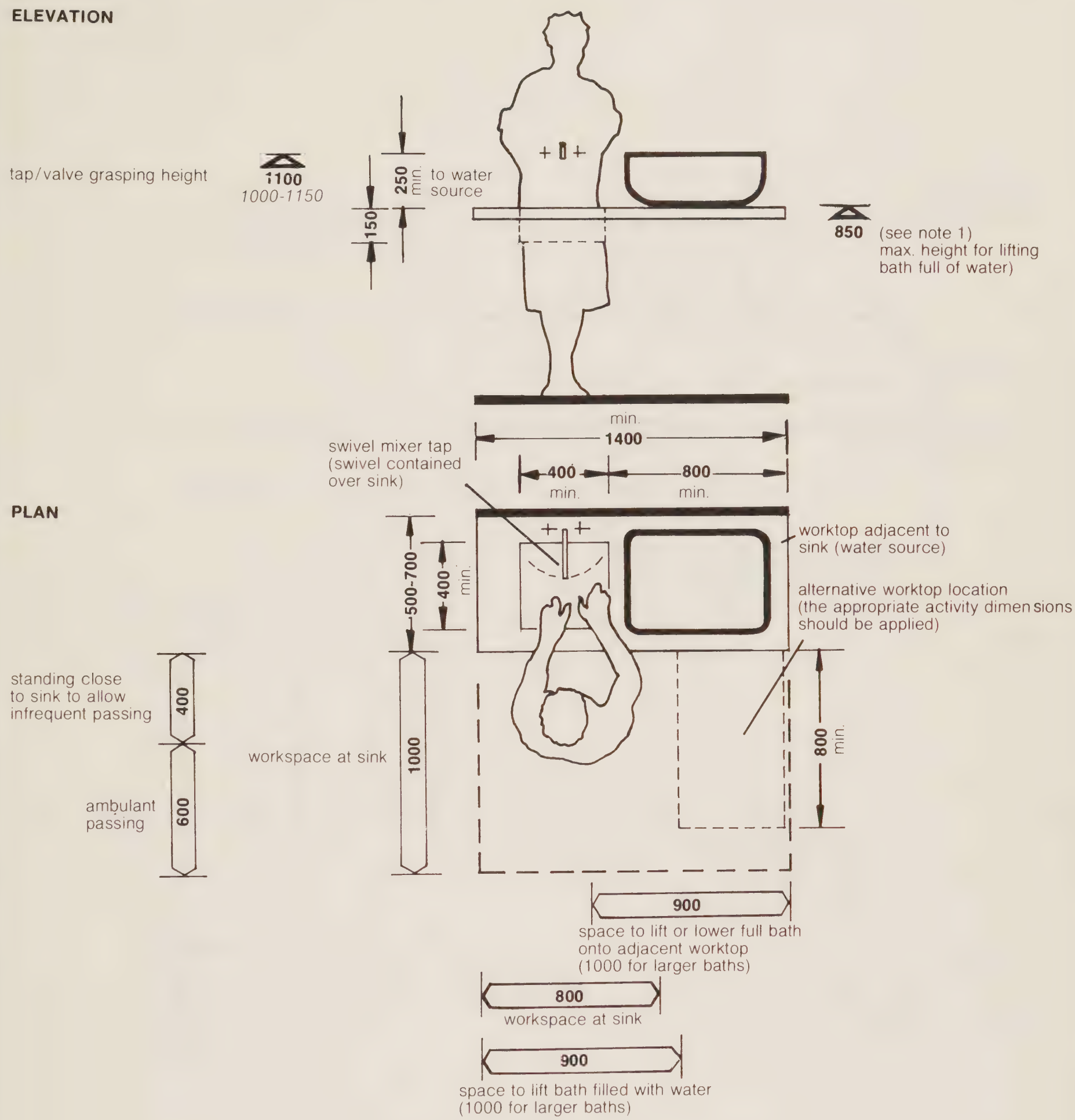
Activities
Filling baby bath with water

DHSS **Ergonomic data bank:**
Component-user data sheet, not to scale

Baby bath

Portable

Users
Female staff or mother



1350 *(1300)*

Preferred minimum *Restricted minimum (not recommended for general use: see explanatory notes)*

Notes

1. For the purpose of filling a baby bath, a worktop/sink rim height of 750-800 is preferred; however as this height is too low to use the sink for normal cleansing activities, 850 is an acceptable compromise. Higher rim heights should NOT be used where baby bath filling occurs frequently.

2. Where baby bath filling is infrequent, and where the facility is used primarily as a sink/worktop a higher rim height is preferable (900-950).

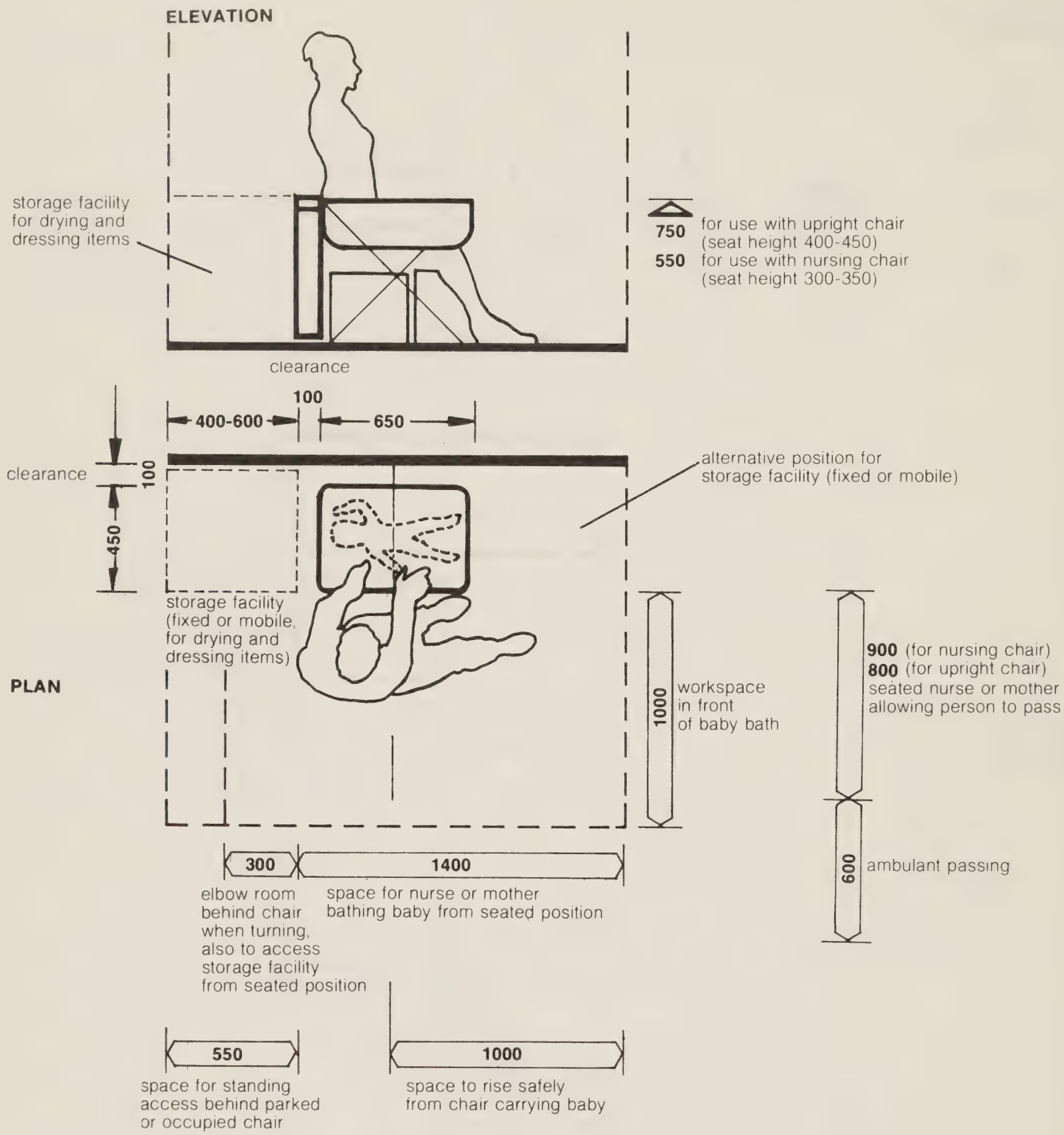
Activities
Bathing baby — seated

DHSS **Ergonomic data bank:**
Component-user data sheet, not to scale

Baby bath

With stand — portable

Users
Mother and baby



1350 *(1300)*

Preferred minimum *Restricted minimum (not recommended for general use: see explanatory notes)*

Activities
Bathing child

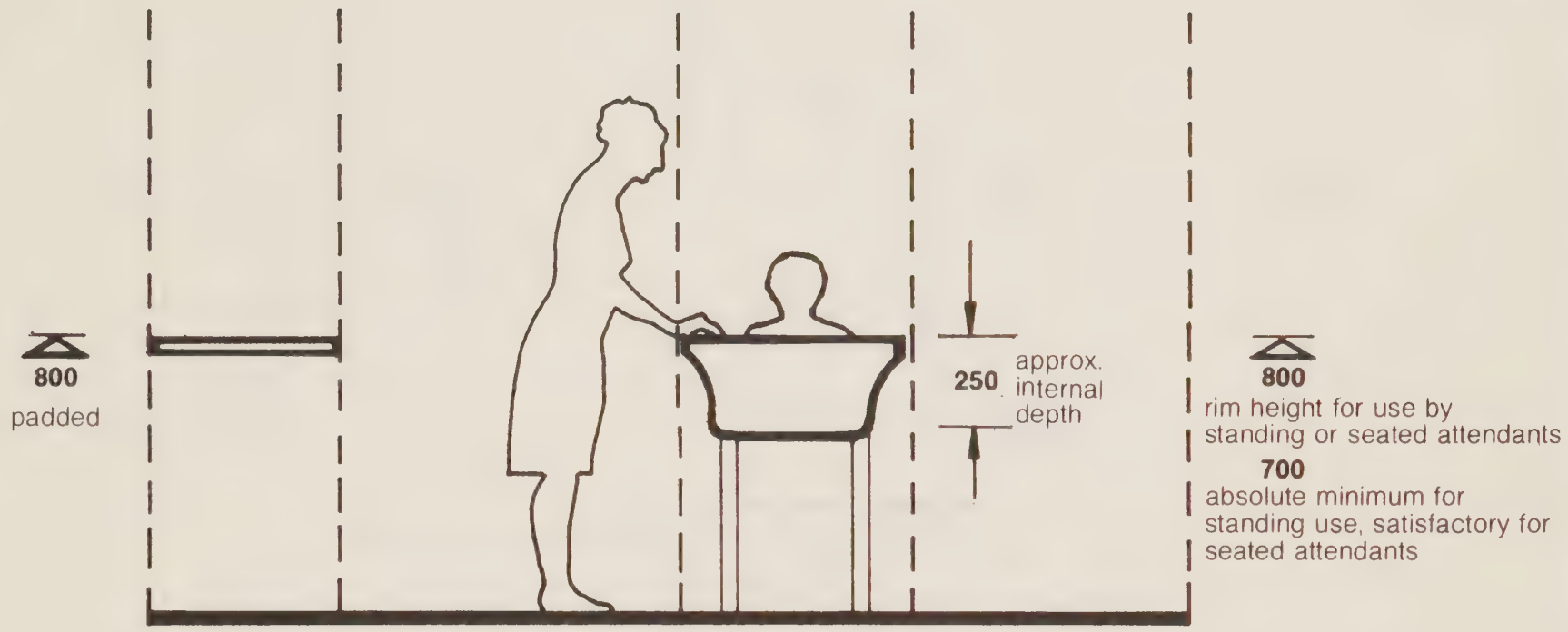
DHSS **Ergonomic data bank:**
Component-user data sheet, not to scale

Bath

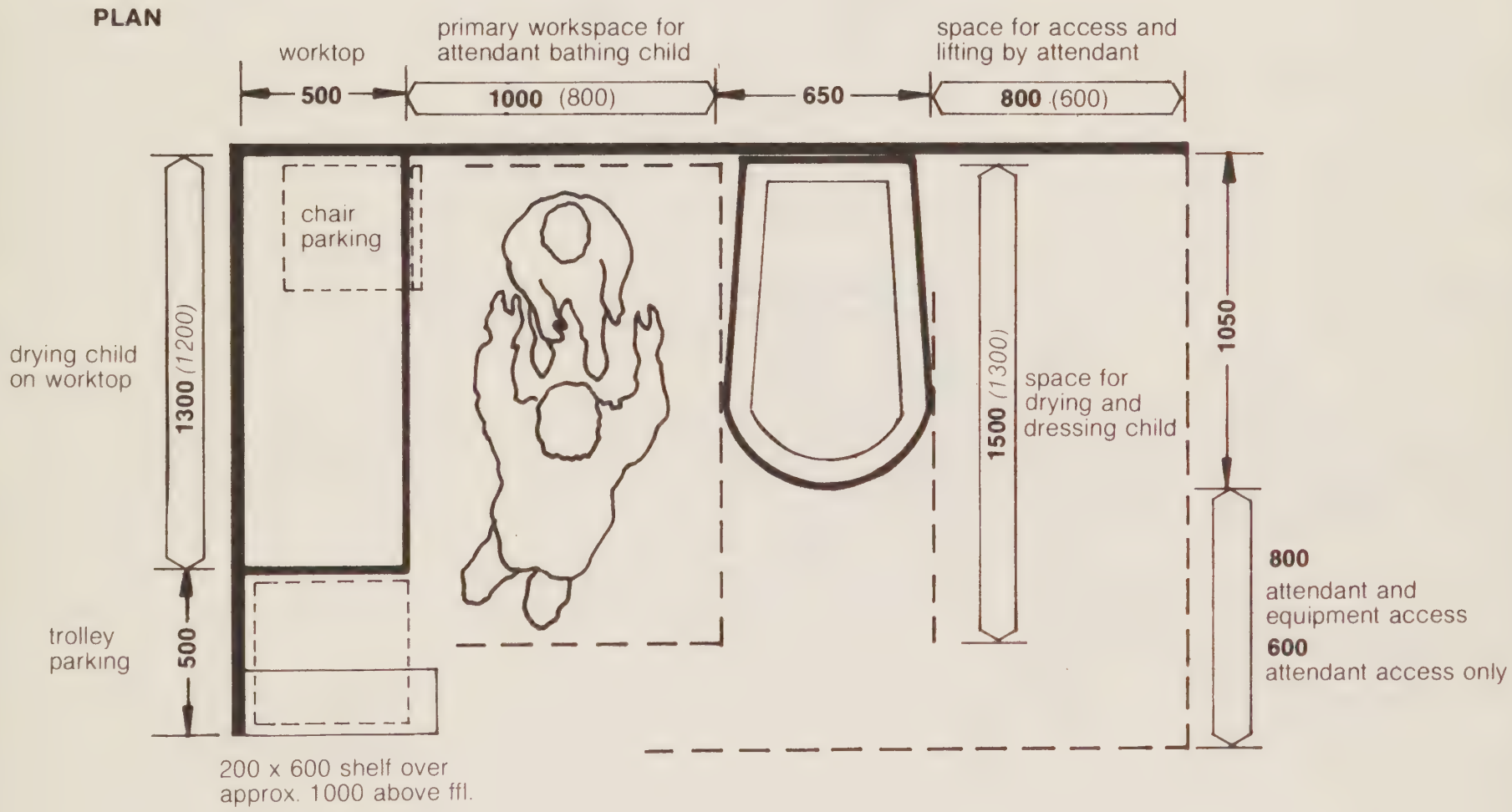
Childs

Users
Children (up to approx. 5 years) with assistance.

ELEVATION



PLAN



1350 *(1300)*

Preferred minimum *Restricted minimum (not recommended for general use; see explanatory notes)*

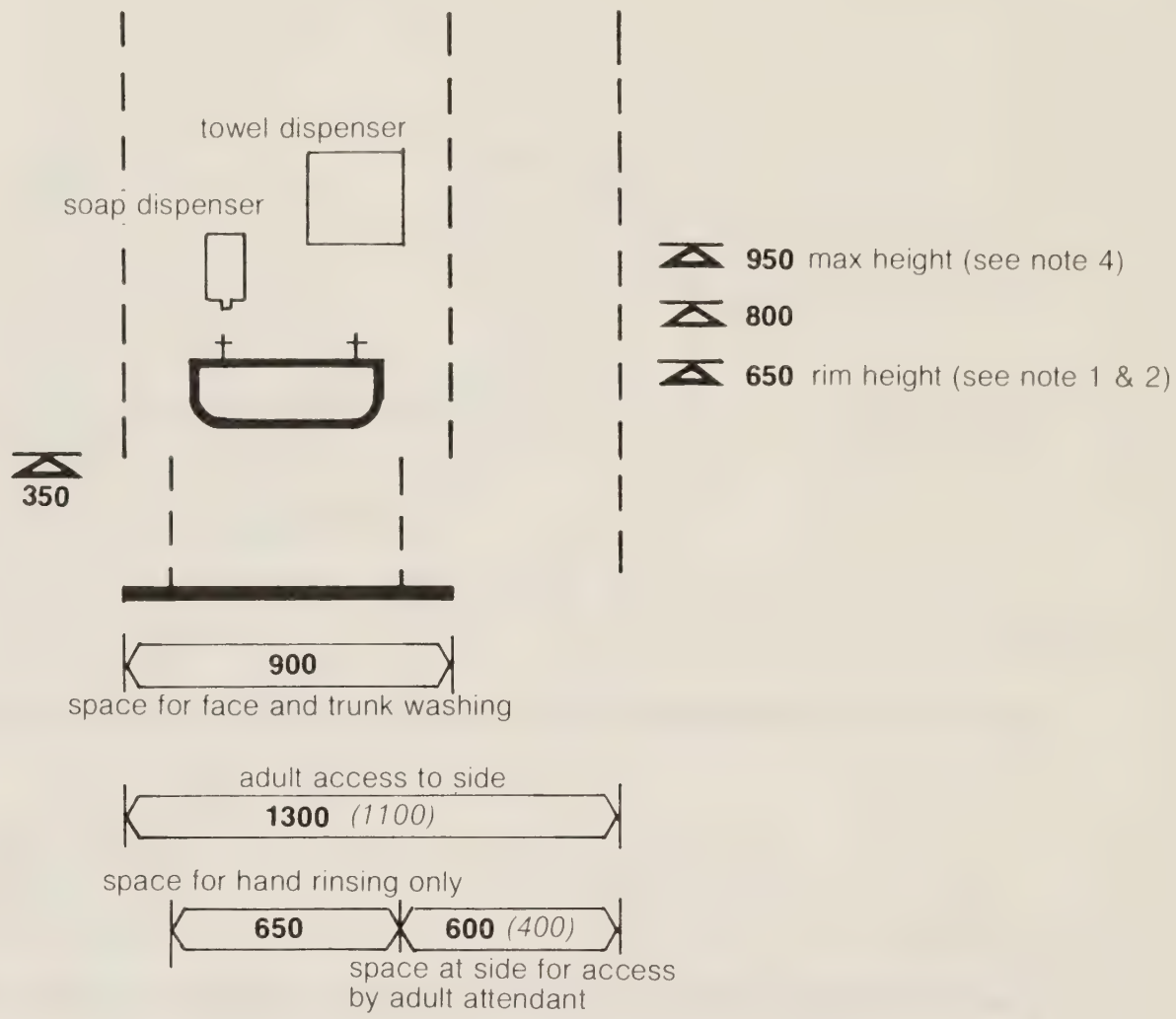
Activities
Personal washing

DHSS **Egronomic data bank:**
Component-user data sheet, not to scale

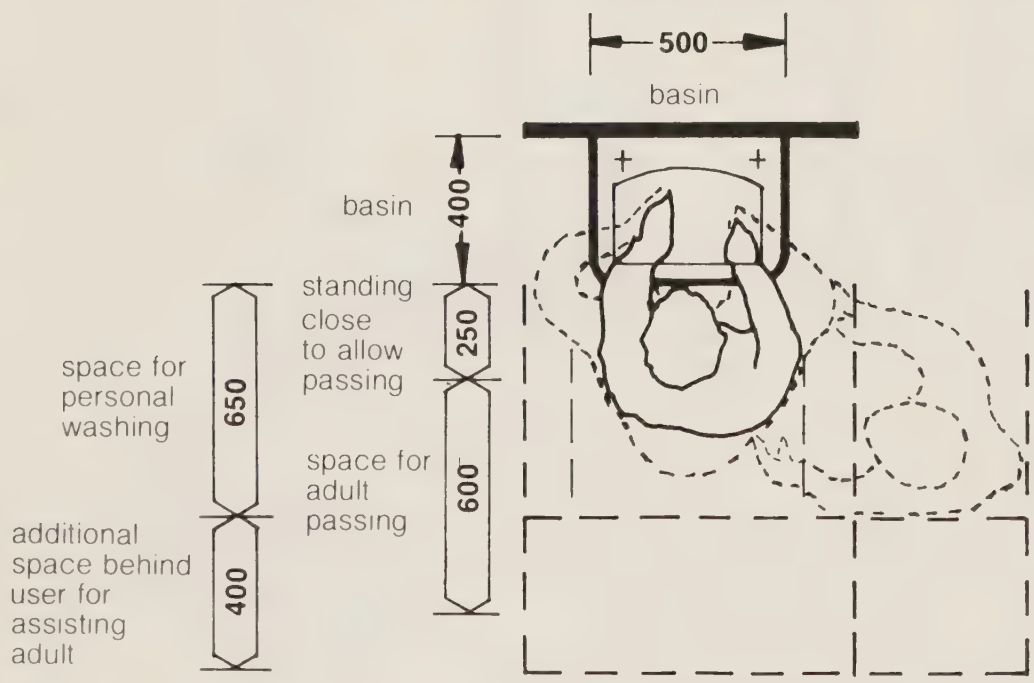
Basin
Medium

Users
Children (3-9 years old)

ELEVATION



PLAN



1350 *(1300)*

Preferred minimum *Restricted minimum (not recommended for general use: see explanatory notes)*

Notes

1. Fixing height requirements depend on the predicted age range of children who will use the facility. The above arrangement is only recommended where there is a large concentration of children in this age group.

2. It is ergonomically desirable to provide two basin rim heights for the age group 3-9 ie 600 and 700, but this is unlikely to be practical

3. Reach to soap dispenser must not be obstructed by position of taps.

4. Recommendations in respect of fixing heights for soap and towel dispensers will depend on the operating action of the type of facility use, e.g. a towel dispenser which requires a tearing action will require to be located lower than the max. height shown.

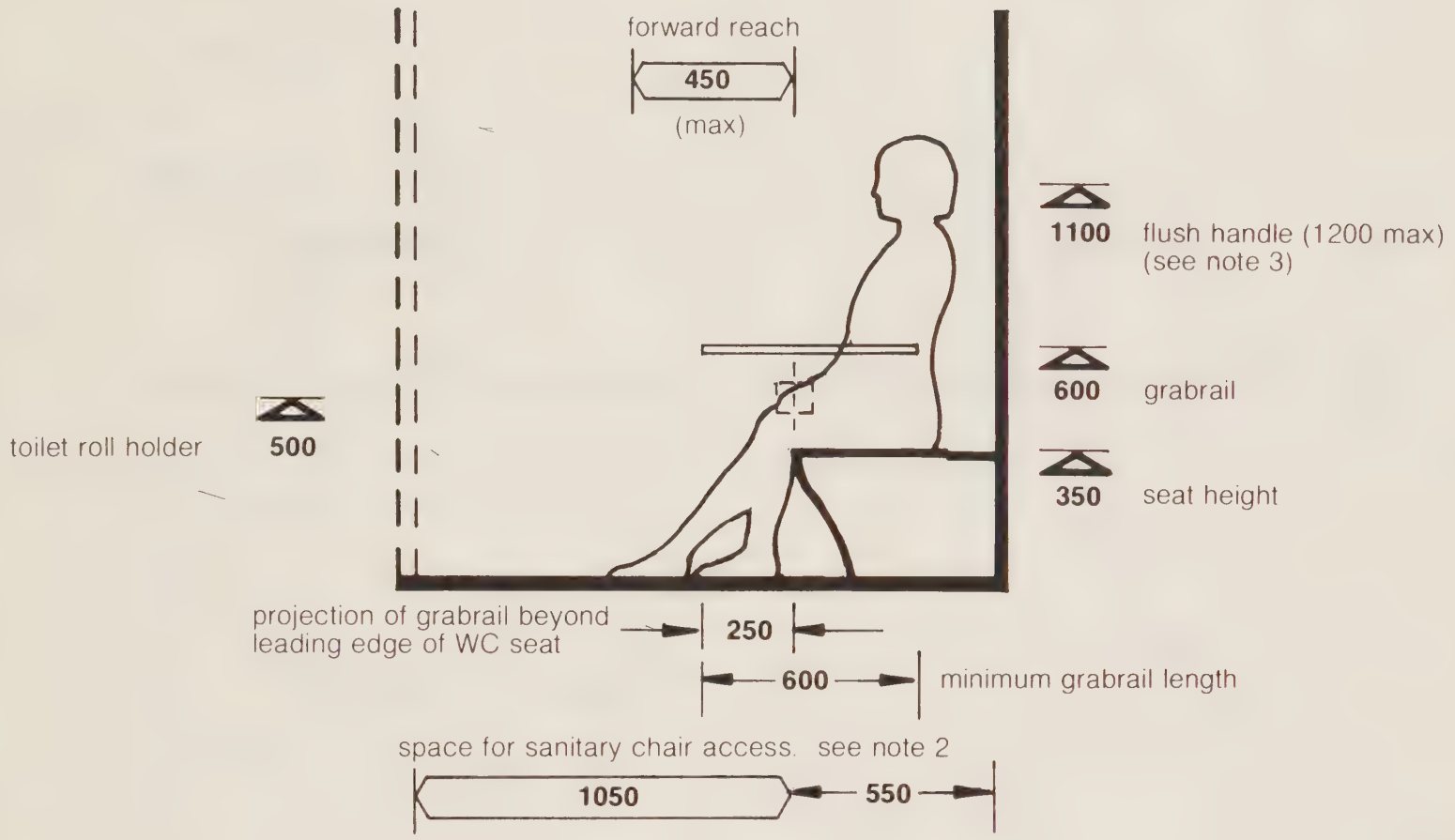
Activities
Use of WC including sanitary chair access and assistance by adult from front and one side.

DHSS **Ergonomic data bank:**
Component-user data sheet, not to scale

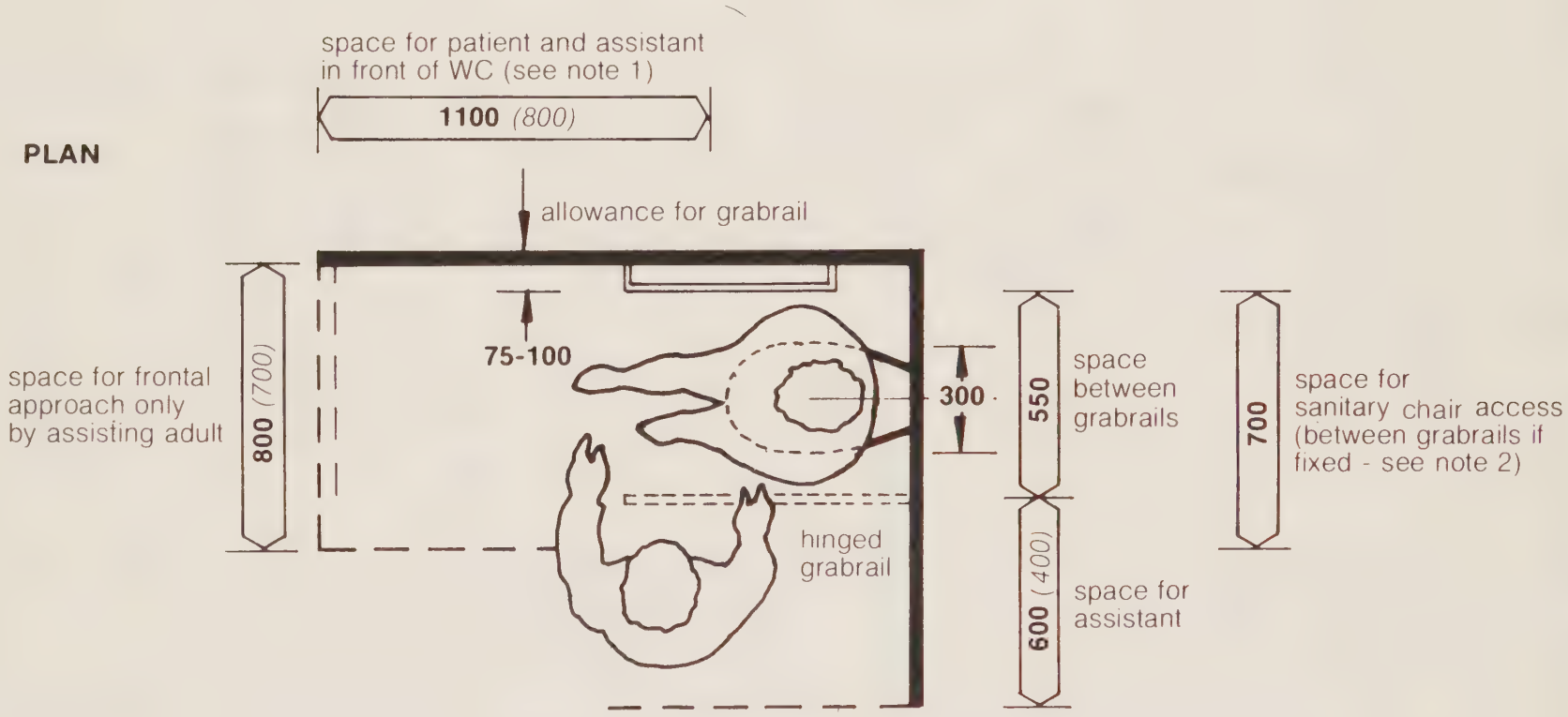
WC
Childs

Users
Children 7-11

ELEVATION



PLAN



1350 (1300)

Preferred minimum *Restricted minimum (not recommended for general use: see explanatory notes)*

Notes

1. The restricted space of (800) in front of the WC is adequate where space to assist from one side is available. Sanitary chairs are not generally satisfactory in use over infant W.C.'s. Young children can be easily transferred from a transporting chair to the WC seat, so that sanitary chairs manoeuvring is not critical for this age group

2. A width of 700 between fixed grabrails is too great and therefore not satisfactory for this age group. Sanitary chair access is consequently only recommended in facilities with space at the side of the WC for assisting adults. N.B. some sanitary chairs also require a large WC pan for satisfactory location over the bowl i.e. a projection of 600 instead of the 550 shown

3. Flush handles lower than 1100 may obstruct sanitary chair location over the WC

Activities
Sitting
Sitting at a table (eg dining, play, study)

DHSS **Ergonomic data bank:**
Component-user data sheet, not to scale

Chair
Chair & Table

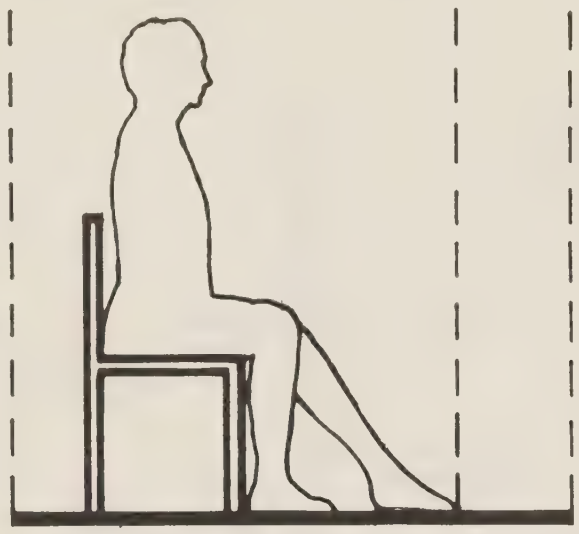
Childrens

Users
Children, age range 3-15 (ages last birthday)

CHILD — SITTING ON CHAIR

CHILD — SITTING ON CHAIR AT TABLE

ELEVATION



seat height.
see table below

N
A
B
C
D

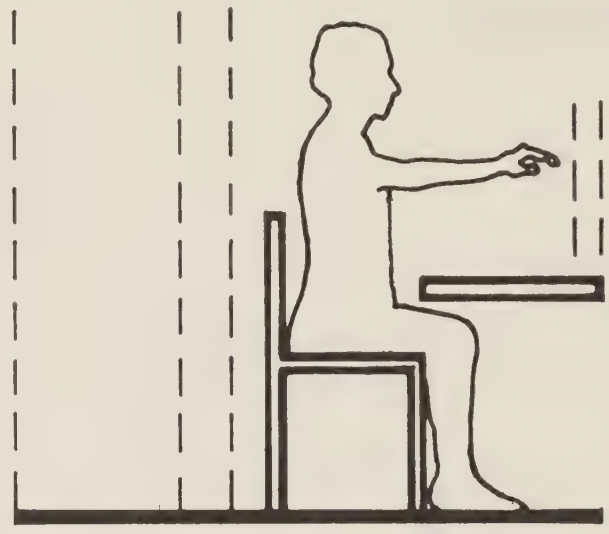


table height
see table below

N
A
B
C
D

Age - space for extended legs (large boy)

3	**350**
7	**450**
11	**550**
15	**600**

NABCD

100-200
clearance

(200-300)
550
restricted leg space
ambulant adult passing

Age - maximum reach (small girl)

3	**350**
7	**450**
11	**550**
15	**650**

ambulant adult passing
550-600

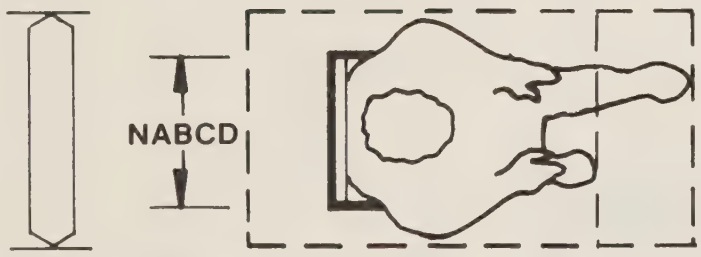
NABCD

100
allowance for chair positioned at table

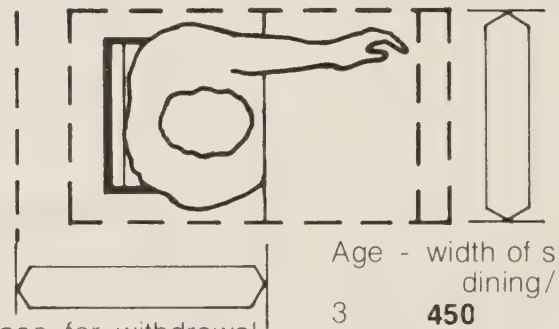
Age - comfortable reach (average)

3	**300**
7	**400**
11	**550**
15	**550**

PLAN



NABCD



Age - space for seated child

3	**500**
7	**600**
11	**750**
15	**800**

Type - space for withdrawal (also affords adult access behind table)

N	**550**
A	
B	**600**
D	**750**

Age - width of space for dining/play/study

3	**450**
7	**500**
11	**550**
15	**550**

CHAIRS & TABLES — SIZES & AGES (see also BS5873 pt.1 School Furniture 1980)

TYPE	SEAT HEIGHT	SEAT SIZE (depth x width)	TABLE HEIGHT	AGES (last birthday) Approximate distribution of sizes appropriate for particular ages of children
N	**260**	**250-270 x 250**	**460**	3-5
A	**300**	**280-300 x 270**	**520**	5-7
B	**320**	**280-300 x 270**	**540**	7-9
C	**340**	**320-340 x 290**	**580**	9-11
D	**380**	**350-370 x 320**	**640**	11-15
ADULT	**420**		**700**	Adult

1350 | *(1300)*

Preferred minimum *Restricted minimum (not recommended for general use; see explanatory notes)*

Notes

SELECTING CHAIRS AND TABLES FOR A

CHILDREN'S DEPARTMENT — where there is a potentially large age range, but a relatively small number of children, it may not be practical to have a large range of alternative sizes of chairs and tables.

Activities
Parking prams, attending to, loading/unloading baby

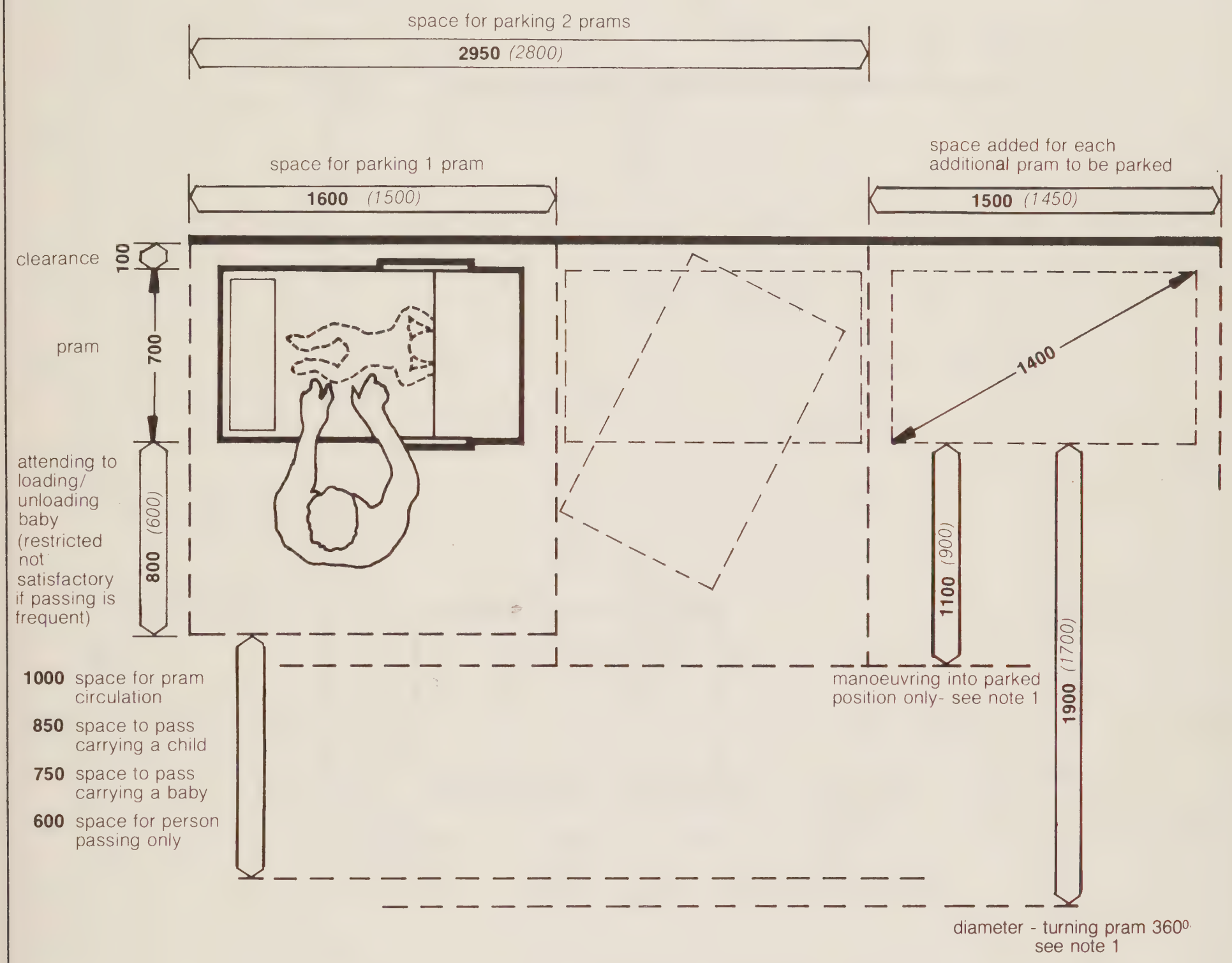
DHSS **Ergonomic data bank:**
Component-user data sheet, not to scale

Pram (1)

Large: 1250 long × 700 wide

Users
Staff or parent

A. PARKING PARALLEL TO WALL (baby can be taken out of pram after parking — manoeuvring pram into parked position is difficult)



1350 *(1300)*

Preferred minimum *Restricted minimum (not recommended for general use: see explanatory notes)*

Notes

1. Where the 1100 (900) allowance is used in a large busy pram park, separate space, for loading and unloading must be provided; also space for turning manoeuvre (360° turn) must also be provided conveniently near (the diameter of space being 1900 (1700)).

Activities
Parking prams attending to, loading/unloading baby

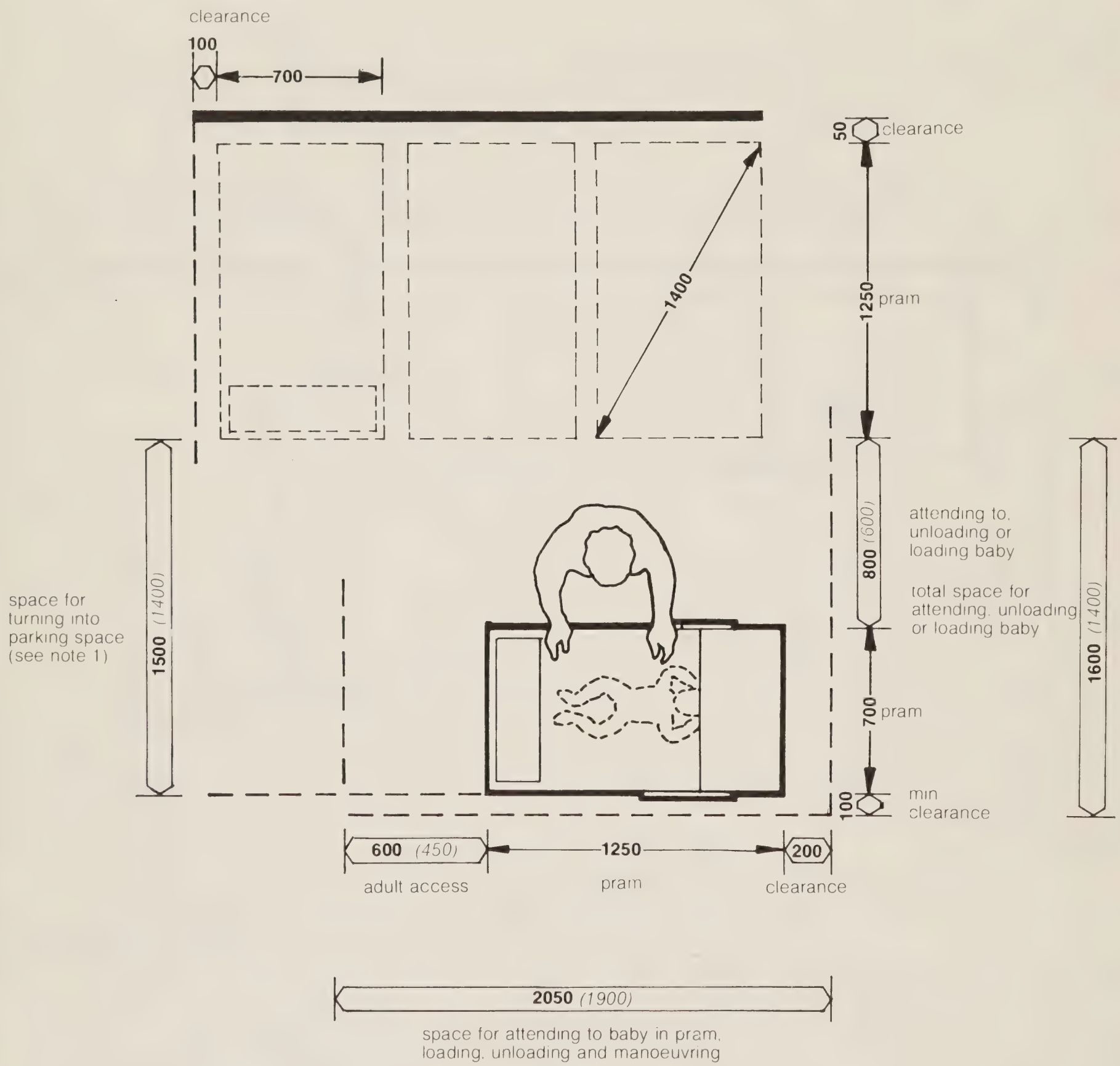
DHSS **Ergonomic data bank:**
Component-user data sheet, not to scale

Pram (2)

Large: 1250 long x 700 wide

Users
Staff or parent

B PARKING AT 90° TO WALL (baby MUST be taken out of pram before parking — manoeuvring to park is easy)



1350 *(1300)*

Preferred minimum *Restricted minimum (not recommended for general use; see explanatory notes)*

in a large busy pram park, separate space, for loading and unloading must be provided; also space for turning manoeuvre (360° turn) must also be provided conveniently near (the diameter of space being 1900 (1700))

Notes:
1. Where the 1500 (1400) allowance is used

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Printed in the UK for HMSO
Dd 737503 C27 4/84

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No. 6 Diagnostic X-ray
10 Kitchens
11 Dining rooms
13 Central sterile supply department
16 Boiler house and steam boiler plant
18 Administrative department
20 Mortuary and post mortem rooms
21 Maternity department
22 Accident and emergency department
29 Pharmaceutical department
35 Department of psychiatry (mental illness) for a district general hospital

Health/Hospital Building Notes

4 Ward units (revised 1968) £1
12 Out-patient department 95p
15 Pathology department (revised 1973) £3
24 Residential accommodation for staff 21p
25 Laundry (revised 1977) £1.50
26 Operating department £1.15
27 Intensive therapy unit £1.25
28 Dental department of the out-patient department 15p
34 Works department for District General Hospitals and Teaching Hospitals 60p
37 Hospital accommodation for Elderly People £3.75
38 Accommodation for Adult Acute Day Patients £3.30
39 Ophthalmic Clinic £4.10

Health/Hospital Equipment Notes

1 Equipping a hospital building 20p
4 Ward units (Revised 1971) 95p
10 Kitchens 85p
11 Dining rooms 60p
14 Training school for nurses 15p
16 Boiler house and steam boiler plant 38p
20 Mortuary and post-mortem room 90p
21 Maternity department £2
23 Hospital Accommodation for Children £4.30
25 Laundry £1.50
28 Dental department of the out-patient department 30p
29 Pharmaceutical department 48p
37 Hospital accommodation for Elderly People £6
38 Accommodation for Adult Acute Day Patients £3.10
39 Ophthalmic Clinic

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First published 1984

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ISBN 0 11 320818 9